DEPARTMENT OF AGRICULTURE AND TECHNICAL
INSTRUCTION FOR IRELAND.

REPORT

OF

PROCEEDINGS

UNDER

THE FERTILISERS AND FEEDING STUFFS ACT, 1906,

FOR THE YEAR

1909-10.

Presented to both Houses of Parliament by Command of His Majesty.

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To

His Excellency John Campbell, Earl of Aberdeen.

Lord Lieutenant-General and General Governor of Ireland.

May it please Your Excellency,

I am directed by the Vice-President to submit to Your Excellency the Report of Proceedings under the Fertilisers and Feeding Stuffs Act, 1906, for the year ended 30th September, 1910.

I have the honour to remain,

Your Excellency's faithful Servant,

T. P. GILL,
Secretary.

Department of Agriculture
and Technical Instruction for Ireland,
Upper Merrion Street,
Dublin, *27th January*, 1911.

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DUBLIN CASTLE,

30th January, 1911.

SIR,

I have to acknowledge the receipt of your letter of the 27th instant, forwarding, for submission to His Excellency the Lord Lieutenant, the Report of Proceedings under the Fertilisers and Feeding Stuffs Act, 1906, for the year 1909-10.

I am,
Sir,
Your obedient Servant,
E. O'FARRELL.

The Secretary,
Department of Agriculture
and Technical Instruction for Ireland,
Dublin.

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

PROCEEDINGS UNDER THE FERTILISERS AND FEEDING STUFFS ACT, 1906

STATEMENT FOR THE YEAR ENDED 30TH SEPTEMBER, 1910.

During the year ended 30th September, 1910, the Department continued their investigations in regard to the condition of the trade in artificial manures and feeding stuffs in Ireland. The Itinerant Instructors in Agriculture, who act in their respective counties as the Department's official samplers, submitted, for the information of the Department, samples representative of the goods supplied or offered for sale to farmers throughout the country. Owing, however, to the onerous duties which devolve upon these officers in their capacity as Agricultural Instructors, the time at their disposal for work in connection with the Act is necessarily limited. In these circumstances, two officers, attached to the Department's central staff, were detailed to devote their whole time for a short period during the busy season to the making of enquiries with regard to the goods supplied and to the taking of samples where necessary. From these and other sources the Department received, during the past year, 441 samples of fertilisers and 291 samples of feeding stuffs, taken under the provisions of Section 12 of the Act, and, of these, 268 fertilisers and 171 feeding stuffs were analysed. A return showing the number of samples drawn by the official samplers resident in each county will be found at page 28.

The following is an extract from the report of one of the Department's officers referred to above:—

> "From the 1st March to the 18th June I was engaged making enquiries and taking samples in connection with the Fertilisers and Feeding Stuffs Act. I proceeded from Dublin and visited the seaport and other towns on the east and south coasts, and subsequently travelled through the chief agricultural centres in the principal southern and western counties. In all, I visited 52 towns and villages and called on 175 traders. Special attention was given to consignments of manures and feeding stuffs lying in goods stores at railway stations or shipping wharves. One hundred and fifty-seven samples were taken and submitted to the Department for examination.

"To most of the traders the proceedings were entirely new, and a lot of time had to be spent in explaining the nature and object of my work. As I expected, I came across a large number of merchants who, at first, resented my visit as an interference with their business. I am pleased to state, however, that in all cases, after I had explained the object of my call, the shopkeepers perceived that it was just as much in their own interest as in that of the farmers that their goods should be sampled and tested. They then gave me every assistance in the operation of sampling. Other traders, on learning of my presence in their town, invited me, of their own accord, to visit their stores with the object of drawing samples of their goods.

"Perhaps in no other business do the merchants and traders engaged possess so little knowledge of the goods they handle. This they are prepared themselves to admit, and they readily acknowledge how dependent they are on the honesty of the manufacturers from whom they obtain their supplies. The majority of these people are sensible enough to understand that, with the spread of agricultural education, through the winter and other agricultural classes, it is to their own interest to stock only fertilisers and feeding stuffs of good quality.

"Speaking generally, the trade in manures and feeding stuffs in the districts through which I have travelled is in a satisfactory condition, and is confined almost exclusively to the products of manufacturing firms of high repute. This is doubtless due to the supervision which is being exercised of late years over the trade in these goods."

The other officer, who was engaged in the north of Ireland, reported as follows:—

"During the three weeks ended 30th April, 1910, I was employed in the counties Donegal, Londonderry, and Down, visiting stores and farms, and taking samples under the Fertilisers and Feeding Stuffs Act. I visited over 60 traders and took samples in 47 cases. In County Donegal, owing to the mountainous nature of the country and the smallness of the farms, there is little demand for these commodities, superphosphate being practically the only artificial manure used. In the two other counties I visited the conditions are, of course, widely different, and there I found a large and increasing trade being done in artificial manures and feeding stuffs obtained from well-known and reliable firms.

"The merchants, as a general rule, supply the invoices, stating the analysis, with sales of fertilisers. In the case of feeding stuffs, however, this does not appear to be the usual practice.

"Most of the traders on whom I called for the purpose of taking samples expressed approval of this procedure and afforded me every facility in my investigations. Many of them stated that both they and the farmers had little knowledge of the stuffs with which they were dealing, and welcomed the Department's action in having samples taken."

I.—INVOICES.

In last year's report attention was drawn to the importance of the provisions of Section 1 of the Act. This Section renders it obligatory on the part of a vendor of fertilisers or feeding stuffs to give to every buyer of such goods, however small the quantity purchased, an invoice stating the name of the article sold, and the percentages of fertilising or nutritive ingredients contained therein. The invoice must be supplied as a matter of course, whether asked for or not by the purchaser, and must be given on or before or as soon as possible after the delivery of the goods. This provision forms the basis of the protection which it was intended the Act should afford to farmers in the purchase of these commodities. The Department are, therefore, using every means in their power to secure the giving of the prescribed invoice in connection with every sale of artificial manures and cattle foods in this country. They are glad to be in a position to report that, as a result of the measures taken by them in the past to impress upon vendors their obligations in this respect, there is evidence that shopkeepers and other agents are now more alive to their responsibilities in the matter. A number of cases, however, in which the requirements in question were not strictly complied with came under notice and were thoroughly investigated. If the failure to supply proper invoices appeared to be due to ignorance, or to an improper conception of the terms of the Act, the Department either communicated specially with the vendors on the subject, or where practicable, directed their official sampler for the district to interview them.

When it was apparent that traders wilfully and repeatedly evaded their responsibilities in this matter, steps were taken by the Department for the institution of legal proceedings under the Act. The following are typical instances of this kind:—

For some years past the local authority of one of the southern counties had under observation the operations of a certain merchant, who, they had reason to believe, was doing a considerable trade in inferior goods, chiefly amongst the small farmers in the county. It was noticed that this dealer did not, as a rule, give the required invoices to purchasers of his goods, thereby depriving them of the warranty provided for under the Act. This was found to be particularly the case where he considered the purchaser too ignorant or too poor to enter into legal proceedings against him for this default. When he had any reason to suspect the possibility of such action being taken, he was very careful to furnish a safe invoice, with some excuse to account for the delay which had occurred between the delivery of the article and the giving of this document. On some occasions he went so far as to refuse to sell, being evidently suspicious as to the object of the purchase. Early last winter, however, a farmer in the neighbourhood ordered a consignment of basic slag, which was duly delivered on the day following that on which the order had been given. As usual, no invoice was supplied. After the lapse of a week the sampler gave the required notice of his intention to sample the manure. By return of post the farmer received a proper invoice, which was dated as if issued at the time of sale, but it was clear, from the postmark on the covering envelope, that the invoice had been sent only after the receipt of the above-mentioned notice. Proceedings were, accordingly, instituted by the Department, with the result that the defendant was convicted and fined £1 and costs. From inquiries made subsequently it was ascertained that the conviction had had the desired effect, and that proper invoices were being given by this trader on all occasions.

In one of the midland counties a somewhat similar case occurred of failure on the part of a local agent to give the prescribed invoice. Several instances of the agent's remissness in this respect came under the notice of the Department, who decided to take proceedings against him. The facts of the particular case in which the prosecution was brought are as follows:—

In December, 1909, a small farmer ordered a ton of the best grade of a well-known brand of basic slag. The agent informed him, at the time of sale, that he could not supply the particular brand mentioned, but that he would send the best grade of another slag, which, he stated, was just as good. The farmer took delivery of this manure, but no invoice was given or sent to him. On mentioning this fact to the County Agricultural Instructor, at a lecture, the latter advised him to write to the vendors for the usual guarantee, which he accordingly did. No reply was received to this communication, and, after the lapse of a fortnight, the farmer again wrote to the vendors pointing out that he had not received the invoice as required by law, and requesting to be supplied with the document at once. They then sent an invoice, from which it appeared that slag had been supplied of a lower grade than that ordered. The document was accompanied by a letter taking exception to the demand for an invoice, and stating that through some mistake in delivery, the farmer had apparently received some manure other than that ordered. In view of the fact that two months had elapsed from the date of delivery of the goods until the receipt of this letter, and having regard to the difficulty experienced by the farmer in obtaining an invoice, the Department could not regard this explanation as satisfactory, and they accordingly instructed their official sampler to take the necessary steps for the institution of a prosecution. On hearing the case, the magistrates decided to convict the defendant, but as it was the first brought before them under the Act they imposed only a nominal fine of 5s. with costs.

As mentioned in last year's report, the Department had occasion to write to a number of merchants in Ireland, pointing out that, as certain feeding stuffs manufactured by them contained ingredients prepared otherwise than by being mixed, broken, ground, or chopped, they were bound to give a statement on their invoices of the percentages of oil and albuminoids contained in these stuffs. Notwithstanding this notification, one of the firms in question persisted in not complying with this requirement. The Department, therefore, directed one of their official samplers to buy a quantity of the meal sold by this firm, with a view to the initiation of a prosecution. The prescribed formalities were all complied with, but, owing to the delay, subsequently alluded to, which occurred in the appointment of a Chief Agricultural Analyst for Ireland, it was impossible to obtain his certificate in time for the prosecution. The Department will not, however, let the matter rest, and the necessary steps are being taken to compel the firm in question to fulfil their obligations under the Act.

The attention of the Department was directed by their official samplers to some instances in which manufacturers of proprietary calf-meals in England failed repeatedly to supply their customers in this country with proper invoices. These calf-meals are usually sold by travelling agents to farmers in the more remote parts of the country. It was decided to take proceedings in a few cases of this kind, and for various reasons it was considered advisable to fix the venue of the hearing in England. In one of these prosecutions which was brought before the police court in Birmingham in August, 1910. the point was raised by the defence as to whether the Department were empowered under the Act to initiate proceedings in Great Britain without having previously obtained the consent of the Board of Agriculture and Fisheries. After discussion of this point, the magistrate decided to dismiss the summons, but, on the application of the Department, agreed to state a case, which will be submitted in due course to the High Court of Justice, King's Bench Division. Proceedings in the other cases referred to are being stayed pending the decision of the High Court on this point.

II.—FERTILISERS.

The reports received by the Department from time to time from their officials throughout the country show that during last season there was an increased demand in Ireland for artificial manures—so great, indeed, that in some instances the manufacturers appear to have experienced considerable difficulty in coping with orders for supplies.

The following are some of the principal reasons assigned for the increased use of artificial manures:—

(*a*) The extension of the area under tillage in Ireland.

(*b*) The knowledge now possessed by farmers of the use and value of artificial manures as a result of the operations of the Department's Schemes of Instruction in Agriculture and Winter Agricultural Classes.

(*c*) In consequence of the action taken by the Department under this Act farmers are now more confident of the possibility of obtaining good fertilisers.

(*d*) Owing to the shortage of keep last winter, the top-dressing of pastures was more general.

(*e*) In anticipation of a continuance of the high prices which were realised for hay last winter, artificial manures were more generally used on meadow lands this spring.

The schedule of unit prices fixed by the Department for use in comparing the approximate commercial values of manures was revised and reissued. A copy of this schedule will be found at page 29.

MANURES RECOMMENDED BY THE DEPARTMENT FOR THE VARIOUS FARM CROPS.

A copy of the memorandum giving the formulæ for the preparation of these manures will be found at page 34. This memorandum was widely distributed, and the Department are pleased to observe the increasing demand for these compound manures, which can either be prepared on the farm from the several ingredients recommended or obtained ready for use from any of the leading Irish manufacturers. It is clear that the increasing use of these manures is making it more difficult for the agents of certain manufacturers to dispose of the costly and unsuitable mixtures hitherto offered for sale by them in this country. This is evidenced by the methods which are now being resorted to by some of these firms to obtain orders for their goods. Mention was made in last year's report of the case of the travelling agent of such a firm who induced farmers to give him orders by representing himself as having been sent out, for the purpose, by the Department. This year the Department discovered that another firm had inserted in their trade catalogues particulars of a fertiliser which, they stated, was recommended by the Department for use as a general manure. From examination of the particulars given it was apparent that the manure in question did not accord in composition with any mixture which had been demonstrated by experiment to be suitable for any one of the commonly cultivated farm crops. It was, in fact, only comparable with superphosphate, to which had been added a very small proportion of a nitrogenous manure and an extremely small quantity of a potash salt. As the above statement in reference to the manure was an absolutely unwarranted use of the Department's name, and was calculated to mislead farmers and vendors of manures, the Department required the firm to withdraw at once from circulation all publications issued by them which contained the statement in question. This incident will demonstrate to traders and farmers the advisability of consulting the Agricultural Instructor for their county before ordering supplies of manures.

ANALYSIS OF SAMPLES.

Of the 268 samples of artificial manures taken by official samplers and analysed by the Department during the year, invoices and full particulars were given in the cases of 248, and of these 172 (*i.e.*, 69.3%) were found to be up to guarantee, 48 (*i.e.*, 19.4%) were found to be deficient within the limits of error allowed under the Fertilisers and Feeding Stuffs Regulations, 1910, and 28 (*i.e.*, 11.3%) were found to be deficient beyond these limits.

A selection, representative of the manures thus tested, together with the results of analysis in each case, will be found at page 37.

From a comparison of the figures relating to samples of manures taken and analysed by the Department since the present Act came into operation, there would appear to be a decided improvement in the quality of the fertilisers sold in this country.

The following table shows the percentages of the samples analysed which were found to be up to their guaranteed composition in each of the years indicated:—

Year.	Percentage of samples up to guarantee.
1907 (1st Jan. to 30th Sept.)	47
1907-8	52
1908-9	54
1909-10	69

Each case in which a manure was deficient beyond the limits of error prescribed in the Regulations was thoroughly investigated. In the very few instances in which the Department were obliged to consider the question of instituting criminal proceedings, it was decided that the circumstances did not warrant such action being taken. As will be seen, however, from the following pages, steps were taken by the Department to secure that the manures in question should in future be up to their guaranteed standard.

Whilst it is pleasing to note that almost 70 per cent. of the samples tested were up to the standard guaranteed by the vendors, it must not be concluded that all the manures from which these samples were taken were satisfactory in every respect. The Department regret to note that several compound manures of inferior quality are still being sold in Ireland, though not to the same extent as in previous years. These mixtures are generally up to their low guarantee, but are sold at exorbitant prices. The Act does not, of course, afford any means of preventing the sale of such compounds, so long as proper invoices are given and the deliveries prove on analysis to be up to the guarantees stated thereon. The Department can only trust that, with the spread of agricultural education, it will soon be found impossible to dispose of such goods in this country.

Every opportunity was availed of by Agricultural Instructors and other officers of the Department to demonstrate, in the course of their lectures and winter classes, and, where possible, by field experiments, the exceedingly low value of these mixtures, as compared with those prepared according to the Department's formulæ to which reference has already been made. A poster was also issued by the Department, warning farmers that such inferior manures were being offered for sale. This poster (a copy of which will be found at page 35) was displayed at every police-barrack throughout the country.

Blood, Bone and Meat and similar Compounds.

Reference was made in last year's report to the methods adopted by the agents of a certain firm of manufacturers in pushing their trade in manures of the above description, and to the action taken in his county by an Agricultural Instructor to protect farmers from being imposed upon by these agents. To demonstrate in a practical way the exorbitant nature of the prices charged for this compound, as compared with its manurial value, the Instructor carried out a series of field experiments, in which it was tested against the manures which could be obtained from local merchants at the same price. Particulars of the results of these experiments were not available for inclusion in last year's report, but, as it is thought desirable that they should now be placed on record, they are set forth at page 43 of this report. The results of these experiments are most conclusive, and it is hoped that close perusal of the report of the trials will serve to put farmers on their guard against being induced to give orders for such compounds—no matter how tempting the terms may be on which they are offered by travelling agents.

Through the efforts of the Department and of the Agricultural Instructor, a stop was put to the operations of this firm in that particular county. Their agents were subsequently discovered trying to find a market for compounds of a similar description amongst the smaller farmers in a remote district of the west of Ireland. In endeavouring to obtain orders, these agents pursued their usual course of misrepresenting the value of the materials, and thereby succeeded in prevailing upon a number of small occupiers to take supplies of the stuff. The latter duly applied the compound to their lands. When harvest time came round, however, they found, to their bitter disappointment, that, instead of the increased crops they had looked forward to as the result of the use of this compound, they had a much poorer return than their neighbours obtained from the application of manures in general use in the district and purchased locally at a much smaller cost. When informed, by a representative of the Department, of the action taken by the purchasers in the cases already mentioned, these western farmers decided, after consulting a solicitor, to act jointly in refusing to pay the full price charged for the compound. The firm has since repeatedly threatened to bring legal proceedings for the recovery of the money, but up to the present no such action has been taken. A number of field experiments, similar to those already carried out with this firm's manures, were conducted in this district under the supervision of the Department's Agricultural Overseer. The results of these trials confirm the statements of the farmers as to the poor returns obtained by the application of this compound.

As indicated in previous reports, the trade in manures of this class was conducted in this country almost entirely by itinerant agents of the manufacturers. The Department were, therefore, greatly surprised to find that a Dublin firm of repute, engaged in the sale of agricultural supplies, had undertaken an agency at the beginning of last season for a fertiliser of this description. Realising that an effort must be made to prevent, if possible, the introduction of these goods through such a channel, the Department immediately pointed out to the firm in question that the sale of such compounds under the name of the firm would not only inflict serious injury on the agricultural interests of the country, but would also, in time, affect adversely their reputation as a firm of good standing. Exception to this action on the part of the Department was taken by the manufacturers, who contended that the nitrogen in their manures, being derived from blood and meat materials, was worth more than if obtained from the usual mineral sources. They submitted that in the case of these manures a higher value per unit of nitrogen content should be allowed than that fixed by the Department, viz., 14s. per unit. The Department could not accept the opinion that the nitrogen obtained from such sources as the waste products from the foreign animals' wharves at Manchester and other places is of greater value than that derived from sulphate of ammonia or nitrate of soda, and they informed the manufacturers to this effect. They also pointed out that the mixtures manufactured by them were badly balanced, and quite unsuited for the particular crops for which they were recommended. Arrangements were, at the same time, made by the Department with the Agricultural Instructor for County Dublin to make practical tests with the mixtures prepared by this firm of manufacturers for the principal farm crops. The results of these tests, which will be found at page 47, prove conclusively that the opinion of the Department in regard to the value of these organic manures was well founded.

Early last winter, an agent for the sale of a fertiliser, described as "Special Concentrated Manure," visited the fairs and markets in an important agricultural district in the north of Ireland, and succeeded in obtaining orders for considerable quantities of this manure. An examination of the guaranteed analysis under which the compound was offered showed that it was of very little value as a fertiliser. One would have thought, therefore, that the farmers of the district, who are generally alive to their own interests, would not be deluded into purchasing such inferior stuff. As might be expected, the crop results were disappointing, and it is hoped that the practical lesson which the farmers have had of the consequences of using material of this sort will not be without result.

BASIC SLAG.

Large quantities of this important fertiliser were imported into Ireland during the past season, and it is understood that one firm, at least, have established works in this country for the grinding of the raw material.

The trade in this commodity has been confined almost entirely to high-grade slags of well-known brands. It is satisfactory to report that the analysis of numerous samples indicates that these slags are, as a rule, well up to the guaranteed standard of quality, solubility, and fineness.

In one instance in which slag guaranteed 34 per cent. citric soluble phosphates proved, on analysis, to contain but 31.32 per cent. citric soluble phosphates, the vendor readily agreed to allow the purchaser a satisfactory rebate. On another occasion, samples taken from a large consignment lying in the stores of a city merchant showed that the slag, although obtained from a manufacturing firm of high standing, was below guarantee to the extent of 4 per cent. in respect of its content of citric soluble phosphates. The result of the analysis was at once brought under the notice of the merchant, who, fortunately, had not sold any lots from this particular consignment, and was therefore in a position to make arrangements for its disposal under a proper guarantee.

There were on the market a few brands of very inferior quality, which were guaranteed to contain but from 7½ to 11 per cent. soluble phosphates. The sale of these slags was closely watched by official samplers, who lost no opportunity of informing farmers as to their true value. The poster on the subject, a copy of which will be found in the Appendices, was again issued, and from correspondence subsequently received it would appear that the warning contained therein had brought home to farmers the necessity for exercising care and judgment in the purchase of this fertiliser.

SUPERPHOSPHATE.

A few consignments of superphosphate of foreign manufacture were imported during the year. The results of the analysis of samples indicated that these consignments were of the guaranteed standard, and the invoices given in connection with retail sales were found to comply with the requirements of the Act.

It might here be mentioned that efforts have recently been made by persons interested in the disposal of creamery sewage to utilise this waste material profitably in the conversion of phosphate of lime into a fertiliser somewhat of the nature of superphosphate. Samples of this manure have been obtained and will be analysed for the information of the Department, who will watch with interest the development of this new process, and the results obtained by the use of the manure.

MURIATE OF POTASH.

In view of the sales last year of muriate of potash containing carbonates and cyanides which rendered it unsuitable as an ingredient in the preparation of compound manures, the Department directed that special attention should be given to the trade in this fertiliser. The analyses of samples submitted showed that the firm which was responsible for the introduction of the particular muriate referred to were complying with the undertaking given by them last season that all consignments of this fertiliser sold by them for agricultural purposes would be free from any objectionable constituents.

MISCELLANEOUS FERTILISERS.

Among other special cases dealt with during the course of the year the following may be mentioned:—

(a) *Bone Superphosphate.*—In the course of his tour of inspection the official of the Department, who was specially detailed to inquire into the trade in manures and feeding stuffs in the south of Ireland, sampled a large quantity of bone superphosphate, which he found in the stores of a merchant trading in one of the seaport towns on the south-east coast. Analysis showed that the manure was very much below guarantee in respect of soluble phosphates, and the merchant was immediately apprised of the result of the test. Some correspondence ensued, in the course of which it transpired that the manure had been lying in the stores for a considerable time, having been obtained the previous year from a firm of manufacturers in the West of England. The merchant ultimately agreed to sell the manure on a guarantee in accordance with the Department's analysis.

(*b*) *Turnip Manure*.—The same officer subsequently submitted a sample of turnip manure, which he had drawn from a shipment just received by a trader in another seaport town. This proved on analysis to be seriously below guarantee in content of soluble phosphates. Representations were, accordingly, made in the matter, both to the local merchant and to the manufacturers. The former promptly decided not to offer the manure for sale, and the whole consignment, amounting to ten tons was returned by him. Some time afterwards, two of the directors of the manufacturing firm called at the Department's offices with reference to the action of the Department in this and similar cases. On discussing the matter with these gentlemen, the officers of the Department satisfied them that the course which had been adopted was justifiable. An assurance in writing was subsequently received from the firm that they would, in future, take all possible steps to secure that deliveries of fertilisers made by them would be up to their guaranteed standard.

(*c*) *Special Manure*.—Samples taken from a small lot of special manure supplied to a local shopkeeper by an Irish manufacturing firm indicated, on analysis, that the manure was slightly under guarantee in every item. The manufacturers, on being communicated with expressed their regret, and promised to take every possible precaution to avoid any further cause of complaint.

(*d*) *Potassic Superphosphate*.—An official sampler in the exercise of his power of taking samples of manures in course of transit, visited the goods stores of a country railway station, where he drew samples from a six-ton lot of potassic superphosphate. The sample was duly analysed. When the analyst's report was compared with the guarantee given to the consignee it was found that, while the fertilizer was somewhat above guarantee in soluble phosphates, it was seriously deficient in content of potash. Representations were made to the manufacturers, who, after investigation, admitted that the compounding of the manure had been imperfectly done, and agreed to allow the purchaser a fair rebate.

GROUND LIME.

Whilst this material cannot properly be classed under the head of fertilizers, its use is of such importance from an agricultural standpoint that it will not be out of place in this report to refer to the inquiries instituted by the Department in regard to some consignments of this commodity, which were sold in the south of Ireland.

In the summer of 1909, a sample of material sold as ground burnt lime was submitted by the official sampler for County Kerry, and on analysis proved to contain only 18.9 per cent. of lime, which was all in the form of slaked lime. Before deciding as to what action they should take in the matter the Department thought it advisable to procure further samples from consignments obtained from the same source. The official sampler was accordingly instructed to purchase a quantity of this material for the purpose. As it was then too late in the season to order lime for agricultural purposes, the sampler did not arrange for the purchase of the lime until the following spring. Samples taken from different parts of the consignment then purchased showed an extraordinary variation in content of caustic lime, and disclosed the presence of by-products from another industry, and an excessive content of hydroxide. An inspector of the Department, accordingly, visited the works from which the consignment had been obtained, and made inquiries into the method of preparation. He ascertained that the same machinery was utilised in these works in processes connected with the manufacture of another material, as well as for grinding burnt lime. The manufacturers submitted that the presence of the by-product in the lime was possibly due to the fact that the machinery had not been properly cleaned before being used for the grinding of the lime. The presence of the excessive amount of hydroxide was accounted for by the fact that the lime stones had been burnt for some considerable time before being ground. On realising the seriousness of the matter the firm readily undertook to exercise greater care in future in the preparation of this material, and promised that only freshly-burnt lime would be used.

Such cases illustrate the desirability of purchasing this material under a guarantee of content of caustic lime. Although the Act does not require the giving of such a guarantee, it is understood to be the practice of the trade, especially in Scotland and in certain parts of the north of Ireland, to supply farmers upon application with an invoice setting forth the percentage of caustic lime contained. In this connection it may be stated that ground burnt lime of good quality should contain, at least, 70 per cent. caustic lime.

III.—FEEDING STUFFS.

Section 1 (2) of the Act requires that invoices stating the percentages of oil and albuminoids contained, must be given in connection with the sale of feeding stuffs prepared otherwise than by being mixed, broken, ground, or chopped. A decided improvement is noticeable in the number of instances in which invoices are given containing the required particulars. This may be attributed in large measure to the efforts made by the Department in previous years to remove the misunderstandings that existed in the minds of so many vendors as to the feeding stuffs to which this requirement applies.

There are now on the market a number of feeding stuffs which have been prepared by being wholly or partially cooked. Invoices containing the above-mentioned particulars should, in the opinion of the Department, be given in connection with the sale of foods prepared in this manner. The Department, accordingly, approached the manufacturers of these goods and pointed out to them their obligations in the matter, with the result, that, after some correspondence, they promised to issue the required invoices in future.

ANALYSIS OF SAMPLES.

Of the 171 samples of feeding stuffs analysed, invoices with full particulars were given in respect of 125, and of these 62 (*i.e.*, 49.6 per cent.) were found to be up to the guarantee; 32 (*i.e.*, 25.6 per cent.) were found to be deficient within the limits of error allowed under the Fertilizers and Feeding Stuffs Regulations, and 31 (*i.e.*, 24.8 per cent.) were deficient beyond these limits.

Whilst it is gratifying to report a slight increase in the percentage of samples analysed that were found to be up to the guarantee, the foregoing figures show that there is still much room for improvement in the trade in these goods. It is regretted that space does not allow of the publication of particulars of all the samples tested, but, as in the case of manures, a selection, which may be taken as representative of all the stuffs tested, has been made, and the results of the analysis of these samples are given at page 40.

LINSEED CAKE MEAL.

Further inquiries were made this year into the condition of the trade in this meal. The result of the Department's investigations shows that there is still a large amount of this feeding stuff imported containing an undue proportion of weed seeds.

Samples taken in one instance from a consignment described as "Russian Linseed Cake Meal," disclosed the presence of weed seeds to the extent of 35 per cent. of the total bulk. The Department therefore made arrangements for the prosecution of the vendors of this meal. It was, however, found impossible to proceed with the case within the time limits prescribed by the Act. This was due to the delay which unavoidably occurred in the appointment of a Chief Analyst for Ireland to fill the vacancy occasioned by the resignation of the Principal Chemist of the Government Laboratories in London, who had hitherto performed the duties of the office in question.

The case stated, referred to in last year's report, which arose out of the prosecution by the Department of a Belfast firm for selling adulterated linseed meal, was duly heard by the High Court of Justice, King's Bench Division. It will be remembered that the question at issue was whether the Department were required under the Act to give their formal consent to the institution of proceedings in their own behalf. The Court decided that the formal consent of the Department was necessary in all such cases.

Mention was also made in last year's report of the civil action taken by a firm of merchants in Londonderry against the importer of a certain adulterated meal, in which a decree was given for the plaintiffs for £25 and costs. An appeal was taken from this decision, but on the hearing in the Superior Courts the decree was confirmed.

CALF MEALS.

With regard to the trade formerly carried on in this country by travelling agents for the sale, at excessive prices, of proprietary calf meals of inferior quality, the Department have to report that, as far as can be ascertained, only a few spasmodic efforts were made during the past year to obtain orders for such feeding stuffs. It is apparent from the report of the officer detailed by the Department to enquire into the matter, and from other sources of information, that the more extensive use of the calf meal made in accordance with the directions contained in the Leaflet No. 54, published by the Department, is gradually ousting these preparations from the Irish market.

The following is an extract from the report furnished by the above-mentioned officer:—

> "I noticed that a large number of traders made up and stocked the calf meal recommended by the Department. Other traders informed me that they had to give up stocking proprietary calf meals owing to there being no demand for them, but that, instead, they sold large quantities of crushed flaxseed and fine Indian and oat meals."

The calf meal referred to can be prepared at home by any farmer from these simple ingredients. It can also be obtained ready for use in many places from local shopkeepers and merchants. Samples of the meal so prepared and sold were taken and examined by the Department. In some instances it was found that meals purporting to be so prepared contained inferior ingredients, or ingredients other than those specified in the leaflet. Samples so taken in the stores of a merchant in a midland town were found to contain, in addition to the approved ingredients, rice meal, and some inferior materials, such as linseed screenings and weed seeds of various kinds. The Department, accordingly, had samples taken on several occasions from the meal lying in the stores of the manufacturer, from whom the merchant had obtained his supplies. These indicated that the bulk from which they had been taken was prepared in a proper manner from the approved ingredients. It was naturally concluded that the adulteration of the meal must have occurred in the stores of the merchant on whose premises the first samples were taken. Arrangements were accordingly made for the purchase, on behalf of the Department, of a parcel of the meal with a view to the institution of a prosecution, if necessary. Samples drawn from the quantity purchased were submitted for analysis to the Agricultural Analyst for the county, and to the Chief Agricultural Analyst for Ireland, both of whom certified that the meal was seriously below guarantee in content of oil. The Chief Analyst, in his certificate, stated that, in his opinion, the meal had not been prepared according to the Department's formula and that it was a very inferior article, containing crushed flax-seed, maize, a considerable amount of rice meal, weed-seeds, and only a small percentage of oatmeal. On hearing from the vendors of the Department's intention to prosecute them, the manufacturers of the meal in question at once approached the Department, and undertook full responsibility in the matter. The explanation submitted by the manufacturers was considered by the Department, and regarded as reasonable, although there was evidence of carelessness and want of supervision on their part in the preparation of the meal. On receiving a satisfactory assurance that greater care would be exercised in future, the Department decided that it would not be necessary to have recourse to legal proceedings.

In another instance, a calf meal described as the mixture recommended by the Department was found, on examination, to be deficient in content of flax-seed. The oat-meal used in the mixture was very inferior and composed mostly of oat-dust and shudes. The attention of the manufacturers having been drawn to the matter, they undertook to follow strictly the directions given in Leaflet No. 54 in the preparation of any meal to be sold by them under the above description.

Some time ago, a firm in Dublin, which manufactured a proprietary calf-meal, approached the Department with a view to inducing them to recommend the use of this meal by farmers. The Department obviously could not comply with this request, and in any event the information supplied by the firm in regard to the preparation of the particular feeding-stuff was not of a satisfactory nature. Notwithstanding the fact that the firm were notified to this effect, their agents were subsequently found to be selling the meal as a preparation recommended by the Department. In one case, which the Department investigated, it was ascertained that the prescribed invoice had not been supplied, and was forthcoming only after some correspondence had taken place between the farmer and the firm. Samples tested were found to be below the guarantee given on this invoice. The Department accordingly decided to institute a prosecution, but before the summons was issued the firm was discovered to be in a state of bankruptcy and about to be wound-up. The Department did not, therefore, deem it necessary to pursue the case further.

From time to time, the Department have had under their notice the operations of a certain Liverpool firm, engaged in the manufacture and sale of feeding stuffs. Some three or four years ago the travelling agents of this firm obtained from small farmers, resident in the more backward parts of the country, very considerable orders for supplies of a calf meal, described as a "milk substitute." To obtain these orders the agents gave glowing descriptions of the properties of the meal, and of its virtues as a substitute for milk, and as a preventive of disease. Deluded by these statements many poor farmers were induced to order supplies of the stuff, trusting that the extravagant price which they were asked to pay would be more than returned to them in the enhanced value of the calves fed on this "milk substitute." In this they were sadly disappointed, for in no case could the results of the use of the feeding stuff be described as wonderful. Some farmers, indeed, who divided their calves into two lots, one of which was fed with the "milk substitute" and the other with Indian meal, found that the animals fed with the latter food throve better and realised more on sale than the former lot. Many farmers also ascribed the loss of promising calves to the use of the "milk substitute." There was, therefore, a natural reluctance on the part of many such purchasers of the stuff to pay the exorbitant price demanded for it, viz.: 28/- per cwt. Many of these cases were investigated by the Department, who were satisfied, as the result of analysis of samples, that, chiefly owing to its low percentage of oil, the stuff was quite unsuitable for use with skimmed milk as a substitute for whole milk for calf-feeding purposes. Its commercial value was estimated to be not greater than 8/- per cwt. The Department, therefore, advised many purchasers who had been induced to give their orders by gross misrepresentation of the value of the "milk substitute," to refuse to pay the full amount demanded, but to offer the sum which its composition justified, *i.e.*, 8/- per cwt. This course many of them adopted, and were, in consequence, sued by the company for the full price charged. At the hearing of the cases the Department's Analyst gave evidence on behalf of the farmers as to the value of the stuff. Where the judges were satisfied that the orders had been obtained by misrepresentation on the part of the vendors, decrees were given in favour of the farmers. In one case the company appealed against such a decision given by a County Court Judge, and the matter came before the Lord Chief Baron at the County Louth Assizes, by whom the decision of the Lower Court was reversed, his Lordship holding that the Department's evidence as to the value of the "milk substitute" was not sufficiently conclusive, being based on the results of analysis and not on actual feeding experiments.

Legal action was subsequently taken by the company against a number of very poor farmers in a remote district of West Cork, who had declined on similar grounds to pay the full amount charged them for this article. Evidence was forthcoming as to the methods employed by the travelling agent to secure orders, and the Department's Analyst testified as to the unsuitability of the stuff for calf-rearing purposes and the exorbitance of the price demanded. The County Court Judge accordingly dismissed the case against one of the defendants, stating that he was prepared to dismiss all the cases, but that he wished to give the plaintiffs an opportunity of taking one appeal as a test case. This the latter did, and the case was listed for hearing at a subsequent Assizes. Feeling that the Judges at the Assizes might, like the Lord Chief Baron, require to be furnished with the results of actual feeding experiments, the Department arranged to have such an experiment carried out at one of their Agricultural Stations by the Superintendent, an official who has had great experience in experiments with livestock.

For the purposes of the experiment, eight young calves were taken as nearly alike in age and type as possible, and divided in two lots of four calves each. Lot No. 1 was fed on the "milk substitute," in accordance with the directions of the makers as issued with every bag of this stuff. Lot No. 2 was fed on a mixture consisting of two parts Indian meal, two parts oatmeal, and one part crushed flax-seed, prepared as described in leaflet No. 54. The only difference made between the two lots was in regard to the food supplied to them. In all other respects they received identical treatment.

There were kept in respect of each lot accurate records of the quantity and cost of the food consumed and of the weights of the animals at intervals of a fortnight. At the beginning of the experiment the animals were examined by a veterinary surgeon, who certified that they were healthy and suitable for experimental purposes.

During the first fortnight, when both lots were fed on whole milk, the increases in weight were as follows:—

No. 1 Lot (afterwards fed on "milk substitute"),	67 lbs.
No. 2 Lot (afterwards fed on home-made meal),	53 lbs.

showing that, if anything, the former were the more thriving lot of the two.

The comparative trials proper commenced after the end of the first fortnight, and the increases of weight made were as follows:—

	Lot No 1 ("Milk Substitute")	Lot No 2 (Home-made Meal.)
2nd fortnight,	6 lbs.	85 lbs.
3rd ,,	11 ,,	87 ,,
4th ,,	30 ,,	89 ,,
5th ,,	17 ,,	92 ,,
6th ,,	15 ,,	81 ,,
7th ,,	29 ,,	104 ,,
8th ,,	26 ,,	103 ,,
9th ,,	18 ,,	88 ,,
10th ,,	36 ,,	114 ,,
	Total, 188 ,,	Total, 843 ,,

The total cost of feeding the No. 1 ("milk substitute") lot was £9 1s. 2¾d., and the total cost of feeding the No. 2 (home-made meal) lot was £10 8s. 3¼d. The cost per cwt. of liveweight increase was: Lot No. 1 ("milk substitute"). £3 19s. 7d.; Lot No. 2 (home-made meal), £1 6s. 1d. This latter statement of cost per cwt. live weight increase assumes that No. 1 lot of calves were equal value, cwt. for cwt., as the No. 2 lot. This, however, is not the case as the No. 1 ("milk substitute") lot at the end of the experiment were actually unsaleable.

At the end of the second fortnight, No. 1 ("milk substitute") lot of calves evidenced malnutrition. Their condition gradually became worse, and, eventually, one of them succumbed twelve weeks after the commencement of the experiment. A veterinary surgeon conducted a post-mortem examination on this calf and certified that the animal died of malnutrition, notwithstanding the fact that it had been fed in strict accordance with the directions given by the makers of the "milk substitute." The experiment abundantly justifies the conclusion that the "milk substitute" in question is absolutely unsuitable as a feeding stuff for calves, a conclusion which would be arrived at after a scientific consideration of the composition of this meal by anyone having a knowledge of the chemistry of food stuffs and of the physiology of nutrition.

The Department were, therefore, in a position to corroborate, with the result of this experiment, their previous testimony as to the unsuitability of the stuff for calf-rearing purposes, and the exorbitance of the price charged for it. Fearing, apparently, the results of the publication of this evidence, the company did not proceed with their appeal, and the cases against the other defendants were dismissed with costs. The trade in this particular feeding stuff may, therefore, it is hoped, be regarded as at an end in this country.

MISCELLANEOUS FEEDING STUFFS.

(*a*) *Cotton Seed Meal.*—While this feeding stuff is usually found to be of good quality and up to guarantee, consignments of an inferior nature are occasionally imported. Samples taken from a consignment in the stores of a trader in an important seaport in the south were found to contain an undue proportion of cotton wool. Even the most cursory examination showed that large quantities of this obviously undesirable and harmful material were present. The use, to any considerable extent, of this meal as a feeding stuff would, of course, cause serious injury to cattle. As it transpired that the consignment had been specially ordered from a Liverpool firm for a certain customer, and was not offered for sale, the Department decided that this was not a case in which criminal proceedings should be instituted by them. They felt, however, that some action should be taken to prevent the importation of such stuffs, and accordingly made strong representations to both the importer and the manufacturers, with the result that the whole consignment was returned to Liverpool.

(*b*.) *Distillers' Grains.*—For some years past, the Department had occasion, from time to time, to take serious notice of irregularities on the part of a certain firm in connection with the sale of this feeding stuff, and it was hoped that as a result of the action taken by the Department there would be no further cause for complaint. They were, therefore, surprised to find that samples of distillers grains sold by this firm during the past season were not in accordance with the guarantee given. Instructions were, accordingly, given for the necessary steps to be taken, with a view to the institution of further legal proceedings. It appeared, however, that the consignment from which the samples in question had been taken was part of a lot imported by the firm from Scotland, owing to a temporary dislocation of their works. In the circumstances, the firm could have taken advantage of the provisions of Section 6 (b) (2) of the Act, and thus escaped conviction. The firm subsequently agreed to revise the guarantee under which they were selling these grains to accord with the figures given in the Chief Analyst's certificate.

(*c.*) *Cod Liver Oil Condiment.*—During the progress of an agricultural class meeting, the attention of the Instructor was directed by a local clergyman to the fact that a travelling agent had been obtaining orders in his parish for supplies of a feeding stuff described as above, at the exorbitant price of 35/- per cwt. Circulars had been distributed amongst the farmers, claiming extraordinary virtues for this condiment, and describing it as specially suitable for unthrifty and backward animals. A sample was immediately taken from a consignment supplied to a farmer, who stated that the stuff seemed to disagree with the calves, which did not thrive as expected. The analysis of the sample showed that the condiment contained, amongst other ingredients, pea and locust bean meal, but no trace of cod liver oil could be discovered. As the consignment from which the particular sample was taken had been on hands for some time before sampling took place, arrangements were made for the sampling of a further parcel of this feeding stuff, obtained with a view to a prosecution being taken. On analysing the sample taken from this lot, the Chief Agricultural Analyst reported that it contained a small quantity of cod liver oil (viz.: 3 per cent.). As the presence in the meal of even such a small quantity of cod liver oil might be held to justify the title "Cod Liver Oil Condiment," the Department were of the opinion that it would not be advisable for them to take any legal action in the matter. No further sales of this stuff have been reported to the Department, which goes to show that a short trial of such preparations is usually sufficient to convince farmers of the folly of purchasing articles of this description.

IV.—APPOINTMENT OF ANALYSTS.

In virtue of his appointment under the Fertilisers and Feeding Stuffs Act of 1893, the position of Chief Agricultural Analyst for Ireland under the present Act, was held by Sir Edward Thorpe, Principal Chemist of the Government Laboratories, London. It was felt, however, for some years past that the administration of the Act in Ireland would be facilitated by the appointment of a Chief Agricultural Analyst resident in Ireland. On the resignation last autumn of Sir Edward Thorpe an opportunity was afforded to the Department of exercising the powers conferred on them by Sections 2 (1) and 12 of the Act to make such an appointment. Mr. David S. Jardin, F.I.C., F.C.S., who had for some years acted as Analytical Chemist to the Department, was selected to fill the post as from 1st April, 1910.

On the demise of Mr. R. Barklie, F.C.S., who had, for many years, filled the position of analyst to a number of important public bodies in the north of Ireland, the appointment of Agricultural Analyst to Belfast Borough and to several northern counties, became vacant. As will be seen from the table given at page 25 of this report, most of these vacancies have now been duly filled.

V.—REGULATIONS.

It was mentioned in last year's report that the question of making regulations under Section 4 (c) of this Act, was receiving the attention of the Department. This Section of the Act confers on the Department the power of prescribing regulations as to the manner in which analyses are to be performed by agricultural analysts. The Department had already issued, from time to time, regulations in separate form under Section 4 (a) (b) and (e). It was considered, therefore, that instead of further increasing the number of sets of regulations it would be more convenient to collate all the regulations made under the Act and to issue them in one publication entitled "The Fertilisers and Feeding Stuffs (Ireland) Regulations, 1910." This was accordingly accomplished, and advantage was taken of the opportunity to make certain modifications, which experience had shown to be desirable, in the regulations previously in force. The most important of these changes is that contained in Clause 12 (a) of the Regulations which provides that no notice of intention to take samples shall be required when the sampling is performed by official samplers on behalf of the Department. This proviso was necessary, in order to enable the Department to exercise fully the special powers of sampling conferred upon them under Section 12 of the Act. In many instances consignments from which the Department may wish to take samples are not under their control, and they could not, in consequence, if required to give three days' notice of sampling, prevent tampering with or removal of the goods. Under the revised regulations, however, the official sampler of the Department can take a sample on the spot without giving any notice. It is provided that in such cases the sampling shall be performed in the presence of a witness.

In the previous regulations provision was made for the taking of samples by means of a sampling pale or spear. The Department were aware that a strong feeling of antipathy to this method existed among manufacturers and vendors. In order to meet their wishes in the matter the Department omitted this method of sampling from the new regulations.

The limits of error allowed in the guaranteeing of fertilisers and feeding stuffs were revised in certain respects. In view of the appearance on the market of low grade basic slags, it is provided that when the percentage of citric soluble phosphates does not exceed 20 the limit of error shall be only 1 per cent. The limits of error for vitriolized raw bones have been extended to vitriolized steamed or boiled bones. In the case of kainit, and other potash salts, the maximum percentage of potash to which the limit of error of 1 per cent. applies was increased from 15 to 30. In the note to the schedule of limits of error in the case of feeding stuffs it has been made clear that ammoniacal or nitric nitrogen is not to be taken into account in calculating the percentage of albuminoids.

Limits of error have also been provided for Soya Bean Cake and Meal.

Copies of the Regulations above referred to may be obtained free on application to the Offices of the Department.

APPENDICES.

FERTILISERS AND FEEDING STUFFS ACT, 1906.

RETURN showing the names and addresses of the Agricultural Analysts under the above Act in each County and County Borough in Ireland, and giving particulars of arrangements existing in some Counties whereby farmers and other residents in the County can have samples of manures and feeding stuffs analysed at a reduced fee.

County.	Name and Address of Analyst.	Special rates which have been notified to the Department at which samples of manures and feeding stuffs are tested for residents in each county.
Antrim, . .	Robert F. Blake, F.I.C., F.C.S., Scottish Provident Buildings, Donegal Square West, Belfast.	Nil.
Armagh, .	J Harold Totton, B Sc., F.I.C. 76, Scottish Temperance Buildings, Donegall Street South, Belfast	Fertilisers and feeding stuffs at 2/6 per sample.
Carlow, .	Sir Charles A. Cameron, Castle Street, Dublin	Fertilisers and feeding stuffs at 3/6 per sample.
Cavan, . .	Do., do., do.	Guano and superphosphate, 5/–; potash, 5/–, feed-stuffs, 5/– per sample.
Clare, . .	Do., do., do.	Nil.
Cork, . .	D. J. O'Mahony, F.C.S., City Hall, Cork.	Nil.
Donegal, .	Charles McMullan, F.I.C., 4 William Street Chambers, Belfast	Fertilisers and feeding stuffs 5/– per sample.
Down, . .	Sir Chas. A. Cameron, Castle Street, Dublin.	Fertilisers, 2/6 per sample (2/6 extra for determination of potash); feeding stuffs, 2/6 per sample.
Dublin, .	Do., do., do.	Nil.
Fermanagh, .	Do., do., do.	Fertilisers and feeding stuffs tested free.
Galway, .	Do., do., do.	Nil.
Kerry, . .	D. J. O'Mahony, F.C.S., City Hall, Cork.	Fertilisers and feeding stuffs 2/6 per sample.
Kildare, .	Sir Chas A. Cameron, Castle Street, Dublin.	Do., do., do.
Kilkenny, .	Do., do., do.	Nil.
King's, . .	D. J. O'Mahony, F.C.S., City Hall, Cork	Fertilisers and feeding stuffs 2/6 per sample.
Leitrim, .	Sir Chas A. Cameron, Castle Street, Dublin	Nil.
Limerick, .	Do., do., do.	Fertilisers, 5/– (5/– extra for determination of potash); feeding stuffs, 5/– per sample.
Londonderry,	— —	—

RETURN showing the names and addresses of the Agricultural Analysts under the above Act in each County and County Borough in Ireland, and giving particulars of arrangements existing in some Counties, whereby farmers and other residents in the County can have samples of manures and feeding stuffs analysed at a reduced fee—*continued.*

County.	Name and Address of Analyst.	Special rates which have been notified to the Department at which samples of manures and feeding stuffs are tested for residents in each county.
Longford, .	Charles McMullen, F. I. C., 4, William Street Chambers, Belfast.	Superphosphates, 5/-; compound manures, 10/-, feeding stuffs, 7/6 per sample.
Louth, . .	Sir Chas. A. Cameron, Castle Street, Dublin.	Fertilisers and feeding stuffs 3/6 per sample
Mayo, .	Do., do., do	Nil.
Meath, .	Do., do., do.	Fertilisers and feeding stuffs 2/6 per sample
Monaghan, .	Do., do., do	Nil.
Queen's, .	Do., do., do.	Nil.
Roscommon, .	Do., do., do.	Fertilisers and feeding stuffs 2/6 per sample
Sligo, . .	Do., do., do.	Samples of fertilisers and feeding stuffs analysed free.
Tipperary (N.),	Do., do., do.	Fertilisers ahd feeding stuffs 3/6 per sample.
Tipperary (S.),	Do., do., do.	Fertilisers and feeding stuffs 12/6 per sample.
Tyrone, .	Robert F. Blake, F.I.C., F.C.S., Scottish Provident Buildings, Donegall Square, W., Belfast.	Nil.
Waterford, .	Sir Chas. A. Cameron, Castle Street, Dublin.	Fertilisers and feeding stuffs 2/6 per sample.
Westmeath, .	Do., do., do.	Do., do., do.
Wexford, .	Do., do., do.	Do., do., do.
Wicklow, .	Do., do., do.	Do., do., do.
Co. Borough :		
Belfast, .	J. Harold Totton, B.Sc., F.I.C., 76 Scottish Temperance Buildings, Donegall St., S., Belfast	Nil.
Cork, . .	D. J. O'Mahony, F.C.S., City Hall, Cork	,,
Dublin, .	Sir Chas. A. Cameron, Castle Street, Dublin.	,,
Limerick, .	Do., do., do.	,,
Londonderry,	Professor Leebody, Magee College Londonderry.	,,

PARTICULARS of the names, addresses and occupations of the persons appointed by the Department to act as Official Samplers under the Fertilisers and Feeding Stuffs Act, 1906

C. J. McCarthy, 4 Upper Merrion Street, Dublin, Agricultural Inspector.
J. Johnston, do., do., do.
J. W. Steen, do., do., do.
J. L. Duncan, do., do., do.,
P. McGovern, do., do., Junior Agricultural Inspector,
J. M. Adams, Agricultural Station, Clonakilty, Superintendent Agricultural Station.
W. J. Megaw, Agricultural Station, Athenry, Superintendent Agricultural Station.
J. Getty, 4 Upper Merrion Street, Dublin, Technical Assistant.
H. Kennedy, Munster Institute, Cork, Farm Manager.
P. Taylor, Stranorlar, Co. Donegal, Agricultural Overseer.
R. Y. Smith, O'Brien's Hotel, Galway do
D. S. Simpson, Prospect Avenue, Westport, do.
G. Doolan, 4 Upper Merrion Street, Dublin, Horticultural Overseer.

J. Marchbank, Carnheath, Carrickfergus.	Agricultural Instructor,	Co. Antrim.
J. Jennings, County Courthouse, Belfast,	do.,	do
J. Bradshaw, The Cottage, Deansbridge, Armagh,	do.,	Co. Armagh.
J. Kelly, Pembroke Road, Carlow,	do.,	Co. Carlow.
J. Hanly, Courthouse, Cavan,	do.,	Co. Cavan
D. Lucey, Courthouse, Ennis,	do.,	Co. Clare
W. F. Prendergast, 11 Park View, Victoria Road, Cork,	do.,	Co. Cork.
A. O'Sullivan, 26 O'Brien Street, Mallow,	do.,	do.
W. A. Pinkerton, Courthouse, Cork,	do.,	do.
T. Ward, Courthouse, Lifford,	do.,	Co. Donegal.
W. D. Davidson, 1 Collingwood Avenue, Belfast.	do.,	Co. Down
J. W. McKay, 23 Harrington Street, Dublin	do.,	Co. Dublin.
W. O. Smyth, Gortaloughan, Enniskillen,	do.,	Co. Fermanagh.
T. Cotter, Ivymount, Athenry,	do.,	Co. Galway.
J. Scully, Main Street, Listowel,	do.,	Co. Kerry.
T. Wade, Glenville, Naas,	do.,	Co. Kildare.
J. Lucey, 29 Patrick Street, Kilkenny,	do.,	Co. Kilkenny
D. T. Ritchie, Central Hotel, Tullamore,	do.,	Co. King's
J. J. O'Sullivan, High Street, Drumshambo,	do.,	Co. Leitrim
T. Wibberley, Ardagh, Limerick,	do.,	Co. Limerick
M. Gleeson, 82 George Street, Limerick,	do.,	do.
D. R. Aiken, 6 Union Street, Coleraine,	do.,	Co. Londonderry
W. L. Phair, Church Street, Longford,	do.,	Co. Longford
A. W. Oldershaw, 30 Ann Street, Dundalk,	do.,	Co. Louth.
J. O'Callaghan, Courthouse, Castlebar,	do.,	Co. Mayo.
J. Duffy, do., do	do.,	do
N. Leitch, Courthouse, Navan.	do.,	Co. Meath.
A. Carruth, Courthouse, Monaghan.	do.,	Co. Monaghan
D. Collins, 9 Market Square, Maryboro'	do.,	Co. Queen's
C. McCarthy, Church Street, Roscommon.	do.,	Co. Roscommon
R. W. Parker, Ballymote, Co. Sligo.	do.,	Co. Sligo.
D. Twomey, 7 Castle Square, Roscrea.	do.,	Co. Tipperary (N.R.)
C. O'Donovan, 7 Sarsfield Street, Clonmel.	do.,	Co. Tipperary (S.R.)
E. S. Daly, Courthouse, Omagh,	do.,	Co. Tyrone.
M. H. McDonagh, Abbeyvilla, Omagh,	do.,	do
P. O'Keefe, County Offices, Dungarvan,	do.,	Co. Waterford
M. Horgan, 25 Earl Street, Mullingar,	do.,	Co. Westmeath
T. J. Gallagher, Courthouse, Wexford,	do.,	Co. Wexford,
J. J. Brennan, do.,	do.,	do
A. Nolan, Bay View, Wicklow,	do.,	Co. Wicklow

RETURN showing the Number of Samples of Fertilisers and Feeding Stuffs taken by the Agricultural Instructor for each county as Official Sampler during the year ended 30th September, 1910.

County.	Number of Samples Taken.		
	Fertilisers.	Feeding Stuffs.	Total.
Antrim,	2	10	12
Armagh,	3	1	4
Carlow,	4	4	8
Cavan,	5	3	8
Clare,	1	2	3
Cork, E.	5	6	11
,, W.	12	10	22
Donegal,	6	—	6
Down,	4	4	8
Dublin,	10	3	13
Fermanagh,	5	6	11
Galway,	1	—	1
Kerry,	6	1	7
Kildare,	5	4	9
Kilkenny,	8	13	21
King's,	6	13	19
Leitrim,	2	4	6
Limerick,	2	2	4
Londonderry,	14	9	23
Longford,	1	2	3
Louth,	9	3	12
Mayo,	—	—	—
Meath,	2	—	2
Monaghan,	—	—	—
Queen's,	2	3	5
Roscommon,	3	1	4
Sligo,	2	1	3
Tipperary (N.R.),	32	11	43
,, (S.R.),	17	21	38
Tyrone,	1	6	7
Waterford,	5	11	16
Westmeath,	2	—	2
Wexford,	13	12	25
Wicklow,	12	5	17
Totals,	202	171	373

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

AGRICULTURAL BRANCH.

VALUATION OF ARTIFICIAL MANURES.

The following Unit Prices have been fixed by the Department for use in comparing the approximate commercial values of manures this season:—

Nitrogen	14/– per Unit.
Phosphates, soluble in water, ...	1/10 ,,
*Phosphates, soluble in Citric Acid; ..	1/4 ,,
†Bone Phosphate, ...	1/6 ,,
Potash, ...	4/6 ,,

* The Unit Value of Citric Soluble Phosphate in Basic Slag is 1s. 9d.

† No allowance should be made for Insoluble Phosphates unless from Bone.

These Units are based on the retail cash prices of manures in Dublin and Belfast. When these units are multiplied by the respective percentages, if any, in the analysis of a manure, and 10/– is added for mixing, the result will represent very nearly the *cash price* of one ton of the manure free on rail at Dublin or Belfast. To ascertain the corresponding price at any other place in Ireland, add the amount shown in the list inside.

No one need pay more than these prices, and, in some instances, manures can be bought at something less, especially is this the case where farmers combine to bulk their orders, or where they buy the ingredients and mix for themselves.

Statement showing the amount which must be added to the Price of Manures in Dublin or Belfast to represent the cost of the same Manures at the following places when purchased from a local merchant or in quantity direct from the manufacturers:—

A.	Per Ton.		Per Ton.		Per Ton.
Abbeydorney ..	8/9	Athboy . .	5/5	Ballinascarty ..	5/4
Abbeyfeale ..	11/1	Athenry ..	8/8	Ballinasloe	8/–
Abbeyleix ..	7/8	Athlone .	7/–	Ballinass	6/3
Achill . ..	10/7	Athy . .	5/6	Ballincollig .	3/1
Adare ..	8/10	Attanagh ..	7/8	Ballinderry	3/4
Aghada .	2/6	Attymon . ..	9/7	Ballindine .	10/10
Aghadowey .	5/1	Augher .	7/10	Ballindrait	4/9
Aghalee . ..	3/8	Aughnacloy .	7/6	Ballineen ..	6/–
Aldergrove .	4/2	Aughrim(Wicklow)	4/8	Ballinglen .	5/5
Annaghmore	5/1	Annascaul	10/4	Ballingrane .	9/4
Antrim	3/8	Aylward's Town	3/4	Ballinhassig	3/2
Ardagh .	9/10			Ballinlough	10/2
Ardara Road .	9/11	B.		Ballinrobe .	10/9
Ardee .	4/5	Bagnalstown ..	7/9	Ballintogher .	8/10
Ardfert . ..	8/4	Balbriggan ..	3/9	Ballintra	8/9
Ardglass .	3/9	Balla .	9/8	Ballybay	5/9
Ardrahan .	10/9	Ballaghaderreen .	10/3	Ballybeg .	5/3
Ardsollus ..	9/5	Ballina . .	6/3	Ballybofey	7/4
Arigna ..	10/9	Ballinahinch ..	11/8	(Stranorlar).	
Arklow ..	3/9	(Co. Galway).		Ballyboley .	5/8
Armagh . ..	5/3	Ballinamallard .	8/5	Ballybrophy .	6/4
Armoy . .	6/5	Ballinamore ..	10/–	Ballybunion .	10/–
Arva Road .	8/6	Ballinamore ..	8/5	Ballycar .	9/10
Askeaton .	8/10	(Donegal).		Ballycarry ..	3/9

	Per Ton
Ballycastle (Antrim)	5/–
Ballyclare	2/4
Ballyclare Junc.	2/11
Ballyconnell	9/5
Ballycullane	4/6
Ballycumber	7/4
Ballydehob	8/7
Ballyduff (Cork)	6/6
Ballygawley	7/7
Ballyglunin	9/11
Ballygowan	2/3
Ballyhack	2/6
Ballyhaise	7/11
Ballyhale	4/9
Ballyhaunis	10/4
Ballyhooley	6/2
Ballyliffin	5/9
Ballymagan	4/7
Ballymagorry	3/10
Ballymartle	4/1
Ballymena	5/–
Ballymoe	9/7
Ballymoney	4/4
Ballymote	9/–
Ballynahinch (Co. Down).	3/11
Ballynahinch Junc. (Co. Down).	3/2
Ballynashee	7/3
Ballynoe	5/3
Ballynure	5/8
Ballyragget	7/4
Ballyroney	5/3
Ballyshannon	7/6
Ballysodare,	7/6
Ballyvary	9/2
Ballyward	5/3
Ballywillan	7/8
Ballywilliam	5/6
Baltimore	7/6
Baltinglass	6/–
Banagher	7/10
Banbridge	4/2
Bandon	4/11
Bangor (Down)	2/5
Bansha	7/11
Banteer	6/6
Bantry	6/3
Barnagh,	10/6
Batterstown	3/4
Bawnboy	10/9
Beauparc	4/1
Bective	4/10
Belcoo	12/–
Bellarena	4/11
Belleek	9/9
Bellurgan	3/10
Belmont	6/6
Belmullet	10/-
Belturbet	8/4
Bennet's Bridge	5/9
Beragh	7/2
Bessbrook	4/9
Birdhill	9/7
Blackrock (Cork)	3/2
Blackwatertown	5/6
Blarney	2/10
Blessington	3/4
Boher	8/8
Borris	7/–
Boyle	9/6
Bray	2/4
Bridge End	3/2
Bridgetown(D'gal)	8/9
Bridgetown(W'ford)	5/4
Brittas	2/7
Brookeboro'	8/11
Brookmount	2/10
Bruckless	10/4
Bruree	7/4
Bunbeg	6/3
Buncrana	4/3
Bundoran	9/9
Bundoran Junc.	8/3
Burnfoot	3/4
Burtonport	6/6
Bush	3/10
Buttevant	6/1
C.	
Cahir	7/–
Cahirciveen	8/9
Caledon	6/1
Camolin	5/9
Campile	3/4
Cape Castle	6/7
Cappagh	6/4
Cappoquin	6/3
Caragh Lake	10/8
Carberry	5/3
Cargan	9/2
Carlingford	3/9
Carlow	7/1
Carndonagh	6/–
Carrickfergus	2/3
Carrickhue	3/9
Carrickmacross	4/5
Carrickmore	7/2
Carrick-on-Shannon	8/5
Carrick-on-Suir	4/7
Carrigaline	3/8
Carrigaloe	4/–
Carrigans	3/10
Carrigrohane	2/10
Carrigtwohill	3/9
Carrowen	3/10
Carrowmore	9/5
Cashel	9/7
Cashelnagor	6/6
Castlebar	8/7
Castlebellingham	3/7
Castleblayney	4/11
Castlecaldwell	9/8
Castleconnell	9/–
Castledawson	6/3
Castlederg.	7/–
Castlefin	5/1
Castlegregory	9/9
Castlegregory Junc.	9/–
Castlegrove	11/–
Castleisland	9/3
Castlemaine	10/–
Castlerea	9/10
Castlerock	4/9
Castletown	6/10
Castletownberehaven	7/6
Castletownroche	6/–
Castlewellan	5/3
Cavan	8/5
Celbridge	2/10
Chapel	4/7
Charlemont	5/3
Charlestown	11/–
Charleville	6/10
Church Cross	9/1
Church Hill	6/7
Clady	4/9
Clara	7/2
Clare Castle	7/6
Claremorris	10/7
Clashganny	6/–
Clifden	10/–
Cloghan	7/4
Clogher	8/2
Cloghroe	3/2
Clonakilty	5/–
Clonakilty Junc.	5/4
Clondulane	5/11
Clones	7/–
Clonmany	4/11
Clonmel	4/8
Clonsilla	1/8
Cloughjordan	7/10
Coachford	4/1
Coachford Junc.	3/1
Coagh(via Moneymore)	7/2
Coalisland	6/6
Colbinstown	5/5
Colebrook	10/10
Coleraine	2/6
Collooney	7/1
Comber	2/1
Convoy	5/5
Cookstown	7/2
Cookstown Junc.	4/8
Cootehill	6/6
Corbally	3/10
Corbet	4/9
Cork	1/3
Corofin	9/2
Courtmacsherry	3/9
Courtwood	5/3
Craigavad	2/1
Cratloe	9/5
Craughwell	10/1
Cresslough	6/6
Crew	7/7
Crolly	6/6
Crookstown Road	4/2
Croom	8/1
Crossdoney	8/4
Crossgar	3/11
Crosshaven	3/9
Crossroads	8/8
Crumlin	3/11
Crusheen	9/11
Cullion	3/–
Culloville	4/3
Cullybackey	5/9
Culmore	1/3

	Per Ton.
Currabinny ..	4/4
Curry ..	10/6
D.	
Dalkey ..	2/11
Delgany ..	3/4
Derryork ..	5/7
Dervock	5/8
Desert ..	5/10
Desertmartin	6/10
Devon Road ..	11/–
Dingle .	7/6
Doagh ..	2/4
Donabate ..	3/–
Donaghadee ..	2/7
Donaghmore ..	6/1
Donamon ..	9/4
Donegal	7/6
Donemana ..	3/–
Donoughmore	4/1
Doonbeg . .	11/6
Dooniskey ..	4/8
Doonan Road	9/10
Downhill ..	4/10
Downpatrick .	3/9
Draperstown .	7/2
Drimoleague ..	7/7
Dripsey .. .	3/7
Drogheda ..	1/3
Dromahair .	8/10
Dromineer ..	7/4
Dromkeen .	9/3
Dromod ..	7/-
Dromore (Down) .	3/8
Dromore Road	7/9
Drumfries ..	5/–
Drumree . ..	3/6
Drumshambo .	10/9
Drumsna ..	9/1
Drumsurn . ..	5/3
Duleek . ..	3/7
Dunadry	3/10
Dunboyne	2/5
Duncannon ..	2/6
Duncormack ..	5/6
Dundalk ..	1/3
Dundrum (Down)	3/9
Dundrum (Dublin)	1/11
Dundrum (Tipperary)	8/10
Dunfanaghy .	6/3
Dunfanaghy Rd	6/6
Dungannon .	5/9
Dungarvan ..	3/9
Dungiven .	5/10
Dungloe Road	6/6
Dunkineely .	10/3
Dunlavin . ..	5/2
Dunleer .	3/10
Dunloy ..	6/2
Dunmanway .	6/9
Dunsandle . .	9/9
Durrow ..	5/6
Durrus Road ..	8/1
E	
Edenderry ..	4/–
Edermine Ferry ..	5/6

	Per Ton
Edgeworthstown ..	7/6
Eglinton ..	3/–
Embankment (Co. Dublin) .	1/7
Emly	8/3
Emyvale Road ..	7/1
Enfield . .	4/7
Ennis . .	7/6
Enniscorthy .	3/3
Enniskillen .	8/9
Ennistymon ..	11/4
F	
Fahan .	3/7
Falcarragh .	6/6
Farranaleen .	6/6
Farranfore .	9/1
Farrangalway .	4/5
Fenit .	7/6
Ferbane . .	6/8
Fermoy	5/7
Ferns .	4/6
Fethard . ..	6/6
Fiddown	4/–
Fintona . .	7/–
Fintown	8/1
Firmount ..	3/10
Fivemiletown ..	8/7
Float .	7/5
Florencecourt .	11/9
Foxford . ..	8/1
Foxhall . ..	6/2
Fox's Bridge .	3/7
Foynes	10/–
G	
Galway . ..	6/3
Garvagh ..	5/1
Geashill . ..	6/11
Gibbstown	3/3
Glanworth .	6/1
Glarryford . .	6/3
Glasslough . ..	6/7
Glenavy . ..	3/8
Glenbeigh .. .	11/2
Glenealy	3/4
Glenfarne .	11/6
Glenmore .	7/2
Glenties .	8/7
Glin(Kerry) .	10/-
Glynn . .	4/4
Goold's Cross ..	8/11
Goraghwood ..	4/5
Goresbridge .	7/6
Gorey .	5/6
Gormanstown .	3/10
Gort .	11/3
Gortatlea . .	8/8
Gowran .	6/11
Graigue .	5/5
Grange	3/9
Grange Con .	5/8
Greencastle .	1/9
Greenisland .	2/4
Greenore .	3/9
Greystones .	3/4
Greenisport .	2/11

	Per Ton.
Gweedore ..	6/6
H	
Hamilton's Bawn .	5/11
Harristown .	4/4
Haulbowline	4/–
Hazelhatch .	2/10
Headford Junc. .	8/6
Headwood .	6/10
Healy's Bridge	2/10
Helen's Bay, ..	2/4
Hilden Siding ..	1/10
Hill of Down	5/5
Hillsborough .	2/7
Hollyhill . .	9/4
Hollymount .	11/1
Holywood ..	1/7
Horse & Jockey .	7/3
Horseleap .	7/3
Howth . .	2/7
I.	
Inch . ..	5/2
Inch Road	3/4
Inniskeen . .	3/4
Inver	9/10
Irvinestown .	8/5
J	
Jordanstown ..	2/3
K	
Kanturk . ..	6/10
Katesbridge ..	5/1
Keady .	6/4
Kells (Ballymena] .	8/5
Kells (Meath) ..	5/9
Kells (Kerry) ..	11/9
Kellswater . ..	5/1
Kenmare .. .	7/3
Kesh . .	8/11
Kilbeggan . ..	7/5
Kilcock ..	3/6
Kilcoo	9/5
Kilcool . ..	3/4
Kilrea ..	3/7
Kildare . ..	4/11
Kildysart .. .	10/–
Kilgarvan (Kerry)..	9/7
Kilgarvan(Tipperary)	7/9
Kilkee . ..	11/3
Kilkenny . ..	6/4
Killagan . ..	6/4
Killala . .	7/6
Killaloe	10/-
Killarney . ..	9/–
Killeagh . ..	5/4
Killeshandra ..	8/9
Killinick . ..	4/8
Killorglin .. .	8/9
Killough .. .	3/9
Killucan . .	5/11
Killumney	3/4
Killurin	4/7
Killybegs . ..	7/6
Killygordon .	5/1
Killylea .. .	5/9

	Per Ton.
Kilmacow	3/4
Kilmacrennan	6/10
Kilmacthomas	4/5
Kilmainham Wood	6/4
Kilmallock	7/4
Kilmeaden	3/7
Kilmessan	4/3
Kilmorna	10/9
Kilmurry (Cork)	3/9
Kilmurry (Clare)	12/1
Kilrane	3/10
Kilrea	5/8
Kilroot	3/1
Kilrush	8/9
Kilsheelan	5/5
Kiltimagh	11/7
Kingscourt	6/5
Kinsale	3/9
Kinsale Junction	3/10
Knockanally	6/10
Knockcroghery	8/11
Knocklong	8/–
Knockloughrim	6/10
Kylemore	7/11

L

Laffan's Bridge	7/–
Laghey	8/9
Lanesborough	7/11
Larne	3/9
Laurencetown	4/7
Laytown	3/7
Leighlinbridge	7/7
Leitrim	5/3
Leixlip	2/6
Letterkenny	5/6
Levittstown	6/1
Leyney	9/3
Limavady	4/7
Limavady Junc.	4/2
Limerick	6/3
Limerick Junc.	7/7
Lisbellaw	8/7
Lisburn	1/10
Liscooley	5/5
Lisduff	8/8
Liselton	13/2
Lismore	6/11
Lisnagry	9/1
Lisnaskea	8/1
Lispole	9/7
Listowel	10/2
Lixnaw	9/6
Lombardstown	6/–
Londonderry	1/3
Longford	8/–
Loo Bridge	8/10
Loughgilly	5/1
Loughmeala	9/11
Loughrea	10/–
Lowtown	4/2
Lucan	2/4
Lurgan	3/8
Lusk	3/2
Luska	7/4
Maam Cross	10/9
Maefin Junc.	4/7

M

	Per Ton.
Macmine Junc.	5/3
Macroom	5/2
Madore	8/2
Mageney	6/7
Maghera	7/2
Magherafelt	6/6
Magheramorne	4/2
Magilligan	5/3
Maguiresbridge	8/5
Malahide	2/1
Malin Head	2/6
Mallaranny	9/8
Mallow	5/4
Manorcunningham	4/11
Manorhamilton	10/7
Markethill	5/6
Maryboro'	6/3
Maynooth	3/–
Midleton	3/4
Middletown (Armagh)	6/4
Milford (Carlow)	7/4
Milford (Donegal)	6/3
Millstreet	7/3
Milltown (Tuam)	10/6
Milltown-Malbay	12/2
Mitchelstown	6/9
Moate	7/6
Mogeely	4/5
Mohill	9/–
Moira	3/4
Molahiffe	9/4
Monaghan	6/3
Monaghan Road	6/2
Monasterevan	4/9
Moneymore,	7/1
Monkstown (Cork)	3/9
Moorefields	7/11
Morley's Bridge	9/4
Mountain Stage	12/3
Mountcharles	7/6
Mountmellick	6/4
Mountrath	7/7
Mountshannon	9/8
Mourne Abbey	4/10
Moville	2/6
Moy	5/3
Moyasta	11/–
Moycullen	7/10
Muckamore	4/2
Mullafarnaghan	4/–
Mullinavatt	3/7
Mullingar	6/4
Mulroy	6/3
Multyfarnham	6/10

N

Naas	3/5
Navan	3/7
Nenagh	7/4
Newbliss	6/8
Newbridge	4/2
Newbuildings	3/2
Newcastle (Down)	3/9
Newcastle West	10/1
Newcastle (Wicklow)	3/2
Newmarket (Cork)	7/3

	Per Ton.
Newport (Mayo)	7/6
Newport Trench	4/2
New Ross	2/6
Newry	2/6
Newtownards	2/1
Newtownbutler	7/7
Newtowncunningham	3/10
Newtownforbes	8/3
Newtownstewart	5/9
Nobber	6/–

O

Oldcastle	7/–
Omagh	6/6
Omeath	5/1
Oola	8/10
Oranmore	7/7
Oughterard	9/3
Ovoca	4/2

P

Palace East	4/7
Pallas	9/3
Parkmore	7/10
Parsonstown	7/4
Passage West	3/7
Patrickswell	8/6
Peake	3/10
Pettigo	9/4
Philipstown	5/10
Pluck	5/4
Pomeroy	6/8
Portadown	3/8
Portarlington	5/–
Porthall	4/1
Portrush	2/6
Portsalon	6/3
Portstewart	4/3
Portumna	8/2
Poulaphouca	3/10
Poyntzpass	5/1

Q

Queenstown	3/9
Queenstown Junc.	3/5
Quin & Ardsollus	9/5
Quilty	12/3

R

Raffeen	3/8
Rahan	6/4
Ramelton	6/–
Randalstown	4/9
Raphoe	5/2
Rathangan	5/3
Rathdrum	3/1
Rathduff	4/1
Rathfriland	8/8
Rathkeale	9/6
Rathmore	7/11
Rathmullan	6/3
Rathnew	3/2
Rathvilly	6/4
Recess	11/7
Redhills	7/11
Retreat	9/9
Rhoda Bridge	4/–

	Per Ton.
Rich Hill	5/1
Ringaskiddy	4/–
Robertstown ..	4/2
Rochestown ..	3/2
Rockcorry	6/2
Rooskey ..	6/10
Roscommon ..	9/4
Roscrea ..	8/5
Ross .	8/10
Rosslare . ..	3/9
Rossmore .. .	7/11
Rossnowlagh ..	10/–
Rush and Lusk .	3/2
Rushbrook .	4/1
S	
St. Anne's .	2/10
Saintfield ..	2/7
St. Johnston .	3/4
St. Mullins .	5/5
Sallins .	3/5
Sallybrook	4/10
Scariff	9/5
Scarva .	5/3
Schull . ..	7/6
Shankill .	2/4
Shannon Bridge	7/11
Shannon Harbour .	6/4
Shillelagh .	6/–
Sionmills	4/11
Sixmilebridge .	9/4
Sixmilecross .	7/4
Skerries	3/8
Skibbereen	7/6
Sligo .	6/3
Smithborough .	7/6
Spa	8/6
Sparrowsland Sdg. .	4/7
Staffordstown .	5/5
Stewartstown .	6/4
Strabane .	3/4
Stranocum .	5/11
Stranorlar .	6/–
Streamstown .	7/2
Swinford	11/6
T	
Tallaght .	1/1
Tallow Road .	6/10
Tandragee .	4/6
Tarbert . .	10/–
Templemore	6/4
Templepatrick .	3/8
The Lamb	2/7
Thomastown	5/4
Thurles	6/10
Timoleague . .	4/7
Tinahely .	5/5
Tipperary .	8/3
Toome Bridge	5/9
Tower Bridge .	2/10
Tralee .	6/3
Tramore .	3/9
Trew & Moy	5/6
Trillick .	8/1
Trim . .	4/11
Tuam ..	10/5
Tubber . .	10/7
Tubbercurry ..	9/5
Tullamore	5/10
Tullow . ..	7/1
Tullymurry ..	3/9
Tynan ..	6/1
U	
Upperlands . .	7/2
Upton . ..	4/1
V	
Valentia Harbour ..	8/9
Vernersbridge ..	5/3
Vicarstown ..	6/–
Victoria Bridge .	5/2
Virginia Road	6/6
W	
Warrenpoint .	3/9
Waterfall .. .	3/2
Waterford .. .	1/3
Wellington Bridge	5/–
Westport ..	6/3
Westport Quay ..	6/3
Wexford . ..	2/6
Whiteabbey .	1/11
Whitehead . ..	3/6
Wicklow ..	1/3
Wilkinstown	5/6
Woodenbridge .	4/10
Woodlawn	9/4
Y	
Youghal .. .	3/9

The following are examples showing how manures may be valued by means of the Unit Prices given in these pages:—

1. Suppose the manure is guaranteed to contain "3·25 per cent. Nitrogen, 23 per cent. Soluble Phosphates, 8 per cent. Potash," its value at Ballybay would be reckoned thus:—

				£	s.	d.
Nitrogen,	3·25 per cent	@ 14/– per Unit,	=	2	5	6
Soluble Phosphates,	23 ,,	@ 1/10 ,,	=	2	2	2
Potash,	8 ,,	@ 4/6 ,,	=	1	16	0
Allowance for Mixing, ..	..	.. . ..	=	0	10	0
Special Allowance for Ballybay (see Statement)		..	=	0	5	9
Value per ton at Ballybay,		.. ..		£ 6	19	5

2. Suppose the guaranteed analysis is "19 per cent. Soluble Phosphates, 1·5 per cent. Potash, 2·45 per cent. Nitrogen," the value of the manure at Tralee would be reckoned thus:—

				£	s.	d.
Soluble Phosphates, ..	19 per cent	@ 1/10 per Unit	=	1	14	10
Potash,	1·5 ,,	@ 4/6 ,,	=	0	6	9
Nitrogen,	2·45 ,,	@14/– ,,	=	1	14	3
Allowance for Mixing,	.. ..	. ..	=	0	10	0
Special Allowance for Tralee (see Statement)			=	0	6	3
Value per ton at Tralee,		.. ..		£4	12	1

Farmers are advised to consult their County Agricultural Instructor before buying any manure if they are in doubt as to its value.

January, 1910.

MEMORANDUM.

MANURES RECOMMENDED BY THE DEPARTMENT FOR THE VARIOUS FARM CROPS.

Oats or Barley.

A mixture of :—

1 part of Sulphate of Ammonia 3 parts of Superphosphate (35%) 3 parts of Kainit	which forms a complete manure, having an analysis of	2·75% Nitrogen. 15·00% Soluble Phosphates. 5·00% Potash.

To be applied at the rate of 5 cwt. per statute acre.

Potatoes.

A mixture of :—

1 part of Sulphate of Ammonia 4 parts of Superphosphate (35%) 1 part of Muriate of Potash	which forms a complete manure, having an analysis of	3·25% Nitrogen 23·00% Soluble Phosphates 8·00% Potash.

To be applied at the rate of 5 cwt per statute acre, along with 15 tons dung.

Turnips

Where a fair quantity of dung of good quality is available it will usually be found sufficient to use along with it 4 or 5 cwt. per statute acre of 35% Superphosphate.

Where the amount of dung is very limited the following mixture should be applied to this crop at the rate of 5 to 6 cwt per statute acre.

1 part of Sulphate of Ammonia 4 parts of Superphosphate (35%) 3 parts of Kainit	which forms a complete manure, having an analysis of	2·5% Nitrogen 17·5% Soluble Phosphates 4·5% Potash

Meadow Hay.

A mixture of :—

1 part of Nitrate of Soda 2 parts of Superphosphate (35%) 2 parts of Kainit	which forms a complete mixture, having an analysis of	3·0% Nitrogen 14·0% Soluble Phosphates 4·0% Potash

To be applied at the rate of 4 or 5 cwt. per statute acre.

As these manures (meadow hay mixture) must not be allowed to stand after being mixed together, Agents and Farmers must get the ingredients separately. The manures must then be mixed on the farm and applied to the meadow the same day.

February, 1909.

[POSTER.]

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

APPLY

BASIC SLAG

TO

PASTURES

EARLY.

REFUSE INFERIOR BRANDS.

READ LEAFLET No. 22,

To be had FREE on application to
The Secretary, Department of Agriculture and
Technical Instruction for Ireland,
Upper Merrion Street, Dublin.

[POSTER.]

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

CAUTION.

MANURES.

FARMERS ARE WARNED THAT EFFORTS ARE BEING MADE THROUGH TRAVELLING AND OTHER AGENTS IN IRELAND TO EFFECT SALES OF CERTAIN IMPORTED MANURES WHICH THOUGH EVEN OF THE GUARANTEED ANALYSIS ARE OF

VERY LOW VALUE

Consult the County Instructor in Agriculture before buying any manures

READ LEAFLET No. 17.

Which contains prescriptions for each crop,
to be had FREE from The Secretary, Department
of Agriculture and Technical Instruction for Ireland,
Upper Merrion Street, Dublin.

[POSTER.]

DEPARTMENT OF AGRICULTURE AND TECHNICAL INSTRUCTION FOR IRELAND.

CAUTION.

CALF MEALS.

FARMERS

ARE

WARNED

THAT

INFERIOR AND EXPENSIVE CALF MEALS

ARE AT PRESENT BEING

SOLD IN IRELAND.

READ LEAFLET No. 54.

To be obtained FREE on application to
The Secretary, Department of Agriculture and
Technical Instruction for Ireland,
Upper Merrion Street, Dublin.

Letters so addressed need not be stamped.

Return giving particulars of a representative selection of Fertilisers analysed by the Department during the year ended 30th September, 1910.

Description of Fertiliser and County in which sample was drawn.	G = Vendor's Guarantee A = Result of Analysis	Phosphates. Total.	Phosphates. Water Soluble.	Phosphates. Citric Soluble	Phosphates. Insoluble.	Nitrogen.	Potash.	Observations. P—Price charged per ton, V—Commercial value ,,	£	s.	d.	
Basic Slag.												
Cork,	G	42	—	36	—	—	—	P	3	10	0	A good sample of a high-grade slag.
	A	47·15	—	36·59	—	—	—	V	3	5	3	
Dublin,	G	42	—	33·6	—	—	—	P	3	0	0	Considerably below guarantee
	A	43·77	—	29·62	—	—	—	V	2	11	10	
King's Co.,	G	—	—	26	—	—	—	P	2	10	0	A medium-grade slag at a reasonable price
	A	31·55	—	27·33	—	—	—	V	2	12	10	
Kildare,	G	30	—	26	4	—	—	P	2	18	0	Seriously below guarantee. Price excessive.
	A	23·06	—	22·34	—	—	—	V	1	10	1	
Kerry,	G	22	—	11	—	—	—	P	2	5	0	A low-grade inferior slag. Price exorbitant
	A	23·08	—	13·54	—	—	—	V	1	4	11	
Superphosphate												
Antrim,	G	—	38	—	—	—	—	P	3	10	0	A high-grade sample at a reasonable price.
	A	—	39·10	—	—	—	—	V	3	11	8	
Wexford,	G	—	26	—	—	—	—	P	2	10	6	Medium grade sample.
	A	—	27·75	—	—	—	—	V	2	14	1	
Donegal,	G	—	20	—	—	—	—	P	2	7	6	Sample of lower-grade superphosphate.
	A	—	21·30	—	—	—	—	V	2	4	7	
Potassic Superphosphate												
Tipperary, S R	G	—	23	—	3	—	4	P	3	11	10	Seriously below guarantee in content of Potash.
	A	—	26·68	—	5·85	—	1·90	V	3	7	4	
Waterford,	G	—	23	—	3	—	4	P	3	8	9	A good sample.
	A	—	24·77	—	6·00	—	4·35	V	3	16	3	
Kainit												
Galway,	G	—	—	—	—	—	12	P	2	10	0	A good sample at a reasonable price.
	A	—	—	—	—	—	12·41	V	3	4	6	
Sulphate of Potash												
Tipperary, N R.	G	—	—	—	—	—	48·5	P	12	10	0	Ditto.
	A	—	—	—	—	—	50·46	V	11	15	6	
Muriate of Potash												
Londonderry,	G	—	—	—	—	—	48·5	P	9	2	6	Ditto
	A	—	—	—	—	—	50·12	V	11	10	1	
Sulphate of Ammonia												
Louth,	G	—	—	—	—	19·75	—	P	14	0	0	Ditto.
	A	—	—	—	—	20·35	—	V	14	9	4	
Nitrate of Soda.												
Wexford,	G	—	—	—	—	15·5	—	P	11	10	0	Ditto.
	A	—	—	—	—	15·75	—	V	11	3	9	
Calcium Cyanamide												
Dublin,	G	—	—	—	—	18	—	P	11	10	0	Ditto.
	A	—	—	—	—	20·05	—	V	14	0	8	

RETURN giving particulars of a representative selection of Fertilisers analysed by the Department during the year ended 30th September, 1910.

Description of Fertiliser and County in which sample was drawn	G = Vendor's Guarantee A = Result of Analysis	Phosphates				Nitrogen	Potash.	Observations. P—Price charged per ton V—Commercial value „				
		Total	Water Soluble.	Citric Soluble	Insoluble.				£	s.	d.	
Nitrate of Lime												
Dublin, .	G	—	—	—	—	13	—	P	10	0	0	A good sample at a reasonable price.
	A	—	—	—	—	14·14	—	V	9	17	11	
Compound Manures.												
Potato Manure												
Antrim, .	G	—	16	—	—	1·03	1·08	P	3	2	6	Potash content low. Mixture not therefore suitable for potatoes.
	A	—	18·15	—	—	1·26	1·18	V	3	10	6	
Dublin, .	G	—	15	—	4	3·29	2·16	P	7	0	0	Very poor value for the price charged.
	A	—	14·38	—	4·89	3·29	1·98	V	4	11	4	
Louth, .	G	—	17	—	2·008	1·026	1·601	P	6	10	0	Price nearly double commercial value.
	A	—	17·51	—	4·87	1·15	1·94	V	3	11	4	
Leitrim, .	G	—	23	—	—	3·25	8	P	7	5	0	A good sample of the mixture recommended by the Department.
	A	—	24·64	—	—	3·43	8·12	V	7	10	4	
Mayo, .	G	14	—	—	—	3·30	1·25	P	7	10	0	Not a suitable mixture. Price exorbitant.
	A	—	8·88	—	18·43	3·78	1·5	V	4	15	7	
Tipperary, S.R.,	G	—	17	—	1	·82	1·08	P	4	2	6	An unsuitable mixture. Price excessive.
	A	—	17·51	—	3·15	·77	·94	V	2	18	4	
Wexford,	G	—	18	—	2	7·41	4	P	8	16	9	A high-class compound for early potatoes. Price reasonable.
	A	—	18·65	—	2·01	7·63	3·50	V	8	12	2	
Turnip Manure												
Limerick, .	G	—	22·62	—	1·4	1·10	·66	P	3	10	0	Seriously below guarantee in content of soluble phosphates.
	A	—	17·37	—	—	1·33	61	V	3	9	5	
Louth, .	G	—	16·84	—	2·07	·82	·91	P	6	0	0	Below guarantee in Potash. Price exorbitant.
	A	—	16·40	—	7·61	1·05	·20	V	3	0	1	
Mayo, .	G	—	17·5	—	—	2·5	4·5	P	5	5	0	A good sample of the mixture recommended by the Department. Price reasonable.
	A	—	21·64	—	—	2·76	4·42	V	5	14	6	
Mangel Manure												
Wicklow, .	G	—	14	—	10	1·66	3·24	P	4	10	0	Seriously below guarantee in Potash. A rather expensive mixture.
	A	—	15·77	—	13·55	1·75	1·86	V	3	18	0	
Roscommon, .	G	—	12	—	—	3·75	4·75	P	6	0	0	Sample of mixture recommended by the Department. Price reasonable.
	A	—	15·13	—	—	3·78	4·84	V	6	2	8	
Oat and Grass manure												
Galway, .	G	—	15	—	—	2·75	5·00	P	5	0	0	A good sample of the mixture recommended by Department. Price reasonable.
	A	—	16·21	—	—	2·87	5·05	V	5	8	10	
Wicklow, .	G	—	18	—	—	1·23	1·62	P	2	19	0	Not specially suitable as a grass manure.
	A	—	17·79	—	—	1·05	1·38	V	3	4	8	

RETURN giving particulars of a representative selection of Fertilisers analysed by the Department during the year ended 30th September, 1910

Description of Fertiliser and County in which sample was drawn	G = Vendors' Guarantee A = Result of Analysis	Phosphates				Nitrogen	Potash	Observations P = Price charged per ton V = Commercial value ,,				
		Total	Water Soluble	Citric Soluble	Insoluble				£	s	d	
Hay Manure												
Dublin, .	G	10	—	—	—	1 64	·54	P	4	10	0	Below guarantee in content of potash Price excessive
	A	12·56	·02	—	—	2·20	·17	V	2	1	6	
Tipperary N.R.	G	—	17·87	—	—	1 82	—	P	3	10	6	Not specially suited as a hay manure
	A	23 73	18 51	—	—	1 68	—	V	3	14	9	
Barley Manure												
Louth, . .	G	—	17 89	—	3·956	1·65	·83	P	7	0	0	Price exorbitant
	A	—	19 65	—	2 97	1·92	1 08	V	4	2	2	
Root and General Manure												
Mayo, . .	G	5	—	—	—	1·65	28	P	4	10	0	A low class compound Price exorbitant
	A	8 03	—	—	—	1·87	1·18	V	2	11	1	
Special Guano Compound												
Mayo, . .	G	—	5	—	11	3·10	1·6	P	10	0	0	Price out of all proportion to commercial value
	A	—	6 12	—	14·38	3·22	1 64	V	4	3	4	
Equalised Guano												
Galway, .	G	20	—	—	—	7·42	1·75	P	8	13	0	Sample of high grade guano
	A	21 64	2 20	—	—	7·63	2·54	V	7	11	8	
Dissolved Bone Compound												
Wexford, .	G	—	20 00	—	5 00	1·03	—	P	3	8	3	A good sample of this class of bone compound
	A	—	21 26	—	5·41	1·12	—	V	3	7	11	
Blood and Bone Compound												
Mayo, . .	G	8	—	—	—	1·65	·56	P	4	15	0	Very low grade compound Not a suitable compound for any crop. Price exorbitant
	A	—	4·19	—	5 37	2 45	—	V	3	1	8	
Bone and Meat Manure												
Carlow, .	G	—	—	8	2	1·45	—	P	3	5	0	A poor sample
	A	15 84	—	8 03	—	1 61	1·17	V	2	16	2	
Blood, Bone and Meat Compound												
Kilkenny,	G	—	2	—	10	2 5	·5	P	4	0	0	Deficient in content of soluble phosphates and potash Expensive
	A	—	0 02	—	10·17	2 73	·15	V	2	16	3	
Blood Manure Compound												
Waterford,	G	—	10	—	8	1	—	P	3	2	6	An expensive compound
	A	—	14·22	—	6 02	1 02	—	V	2	11	6	
Bone Manure and Potash												
Wexford, .	G	—	20	—	5	1 23	·57	P	3	13	0	Fair sample of this class of manure
	A	—	22 90	—	—	1·33	·59	V	3	15	8	
Compound Manure												
Mayo, .	G	8	—	—	—	1·62	·54	P	4	10	0	Comparatively useless mixture Price excessive
	A	—	4 8	—	22	2 24	1 58	V	3	6	11	
Special Manure												
Cork, . .	G	—	16	—	8	2 47	2 16	P	4	12	3	Fair sample
	A	—	14 73	—	9 61	2·80	3 36	V	4	12	6	

RETURN giving particulars of a representative selection of Feeding Stuffs analysed by the Department during the year ended 30th September, 1910

Description of Feeding Stuff and County in which sample was drawn	G = Vendor's Guarantee A = Result of Analysis	Oil.	Albuminoids.	Price charged.	Observations
Crushed Flaxseed.					
Leitrim,	G	Pure.		3/- per st	Found on examination to be pure as guaranteed.
	A	35·08	—		
Calf Meals					
Kilkenny,	G	—	—	2/- per st	Inferior sample of meal stated to have been prepared in accordance with the formula given in Department's Leaflet No. 54. Contains 8 % weed seeds and insufficient oatmeal.
	A	10·75	16·98		
Waterford,	G	—	—	13/- per cwt.	Found to have been prepared, as guaranteed, in accordance with formula given in Leaflet 54
	A	—	—		
Cork,	G	—	—	12/- per cwt	A good sample of a calf meal prepared at home in accordance with the formula given in Leaflet 54.
	A	10·74	14·87		
Cork,	G	4	18	28/- per cwt	Not suitable as a "Milk Substitute Worth at most 8s. per cwt.
	A	4·09	20·56		
Mayo,	G	8·0	18·0	17/- per cwt.	Seriously below guarantee in oil
	A	4·95	26·24		
Antrim,	G	6·0	18·00	12/- per cwt	Sample in fair condition
	A	6·97	25·62		
Louth,	G	14·40	34·37	18/8 per cwt	A good sample, though slightly deficient in content of albuminoids
	A	16·53	32·38		
Londonderry,	G	9	22	£8 12s. 6d. per ton	In bad condition. Contains an excess (3·83 %) of sand
	A	11·45	23·42		
Londonderry,	G	7	22	£8 10s. per ton.	Not a suitable calf food. Contains an excess (9·84 %) of fibre.
	A	8·30	26·04		
Cork,	G	6	21	14/6 per cwt	Fair sample.
	A	3·78	21·87		
Tyrone,	G	3·85	23·62	2/6 per st	Not suitable for use with separated milk as a milk substitute. Price exorbitant
	A	3·12	22·06		
Kilkenny,	G	5	23	12/- per cwt	Not suitable as a milk substitute.
	A	4·63	24·36		
Limerick,	G	14	13	15/- per cwt	Seriously below guarantee in oil. Contains 2·65 % sand. Unsuitable for calf feeding
	A	10·93	14·43		

Return giving particulars of a representative selection of Feeding Stuffs analysed by the Department during the year ended 30th September, 1910.

Description of Feeding Stuff and County in which sample was drawn.	G = Vendor's Guarantee A = Result of Analysis	Oil.	Albuminoids.	Price charged.	Observations.
Linseed Cake Meal					
Tyrone, . .	G	8·00	28·00	£9 5s. per ton.	Very poor sample. Contains 35 %. weed seeds.
	A	7·39	25·53		
Tipperary N R, .	G	6	29	11/- per cwt.	Good pure sample.
	A	8·47	33·00		
Wexford, . .	G	10	29	£10 1s. 3d. per ton.	Do.
	A	9·28	31·18		
Cotton Seed Meal.					
Waterford, . .	G	Pure.		11/6 per cwt.	Very inferior sample. Contains a considerable quantity of cotton wool.
	A	—	—		
Oil Meal.					
Londonderry, .	G	8	27	£9 7s 6d. per ton	Very objectionable sample Contains linseed cake meal and about 30 % screenings
	A	9·20	27·12		
Pig Meal.					
Tipperary (S R.), .	G	6	15	£5 12s. 6d. per ton.	Very poor sample Contains oat dust, oat shudes, rice meal, weed seeds, and a little inferior linseed cake meal.
	A	5·89	17·64		
Waterford, . .	G	6	14	£7 per ton.	Stale and contains large numbers of mites Price excessive.
	A	4·57	14·87		
Soya Bean Meal.					
Londonderry, .	G	18	39	£8 17s. 6d. per ton.	Seriously below guarantee in oil.
	A	14·67	41·56		
Feeding Meal					
King's County, .	G	10·00	20·00	£7 per ton.	Consists chiefly of screenings
	A	8·94	20·12		
Antrim, . .	G	10	20	£6 17s 6d. per ton	Stale and dirty.
	A	9·78	23·62		
Linseed Cake.					
Dublin, . .	G	10·00	31·00	£9 2s. 6d. per ton.	Good pure sample.
	A	11·02	30·11		
Tipperary (N R.),	G	8	28	10/6 per cwt.	Do.
	A	7·26	32·60		
Cotton Cake					
Tipperary (N R), .	G	9	41	9/9 per cwt	Pure and up to guarantee.
	A	9·65	42		
Kilkenny, . .	G	8	40	10/- per cwt.	Do.
	A	8·05	40·25		

RETURN giving particulars of a representative selection of Feeding Stuffs analysed by the Department during the year ended 30th September, 1910

Description of Feeding Stuff and County in which sample was drawn	G = Vendor's Guarantee. A = Result of Analysis	Oil	Albuminoids	Price charged	Observations
Soya Cake					
King's County,	G	1·0	43·00	£7 9s. 6d per ton	Taste and colour objectionable
	A	2·08	43·91		
Pig Feeding Cake					
Antrim, . .	G	6·00	13·00	7s 9d per cwt	Stale and dirty. Price excessive.
	A	6·38	20·12		
Fattening Cake.					
Queen's County, .	G	10	20	£7 16s per ton.	An objectionable cake. Largely composed of sweepings and cleanings
	A	10·65	21·25		
Wexford, . .	G	10	20	£7 10s. per ton.	Stale and very inferior cake.
	A	11·55	21·43		
Fermanagh, . .	G	10	20	8/3 per cwt	Do.
	A	9·38	20·16		
Poultry Food.					
Londonderry, .	G	8·10	16·75	10½d per stone.	Seriously below guarantee in oil.
	A	4·74	21·00		

Results of Manurial Tests referred to in this Report under heading "Blood, Bone and Meat and Similar Compounds" (pages 11-13.)

I.—TESTS CONDUCTED BY AGRICULTURAL INSTRUCTOR FOR CO. MONAGHAN.

The following is extracted from the Instructor's report:—

"A number of inquiries were made in the spring of last year (1909) as to the quality of a manure, sold by a Liverpool firm, under the name of No. 2 Blood and Bone Compound. The whole question was a very important one, and it was decided to put the Blood and Bone Compound to the test in the field along with manures which were being sold locally. The basis of the test was that of equal value, but it will be seen on examining the table below, that in most comparisons the manure mixture cost considerably less than the Blood and Bone Compound, the object being to make a liberal average allowance for mixing the manures. (Note that in one experiment superphosphate was used alone.) Chemical analysis showed that the Blood and Bone Compound was being sold at a price more than double its real value; that is to say—more plant foods could be purchased in manures sold locally for £1, than could be procured by spending £2 on Blood and Bone Compound of the above-mentioned brand. In order that a good crop may be produced, there must be a sufficient supply of plant food in the soil; other things being equal, if the soil contains only half enough of useful plant food, then half a crop is all that may be expected. From this it will be apparent that in cases when a manure is sold far beyond its value, the loss by overcharge will be quite insignificant when compared with the low yield of crop, seeing that the farmer, by using such stuff, is only giving half the dressing which was intended to be applied. The table below shows the details of the experiments and should be studied in conjunction with the following notes. In all tests the character of the soil should be carefully noted. Series No. 1 includes the tests in which Blood and Bone Compound and a manure mixture of equal value were used alone. It will be observed that there is a good balance in every case in favour of the manure mixtures used.

"In series No. 2. where farmyard manure was used in addition to the artificials, the difference was not very marked in test No. 1, and it should be carefully noted the addition of the Blood and Bone Compound had no effect in increasing the crop—compare the yield from farmyard manure alone with that from farmyard manure and Blood and Bone Compound. The addition of the mixture to the farmyard manure gave a sufficient increase to pay for the artificials.

"In test No. 2, however, the mixture along with the farmyard manure, gave 10 tons more turnips than the Blood and Bone Compound in conjunction with the dung, a very substantial increase.

"This test shows that judgment is required in the purchase of artificial manures, and that the method of buying according to price per ton is entirely false, seeing that in these tests the Blood and Bone Compound was far too dear even although the farmers had got it for nothing.

"The term "Compound" such as Blood and Bone Compound, etc., is used in connection with the manure trade in an unrestricted sense, and farmers, until they are advised to the contrary, are justified in looking on that word with suspicion. Doubtless a good many are of opinion that a manure sold as Blood and Bone Compound is prepared by mixing Blood and Bones only. That this is not the case will be quite apparent on examining the analysis of this Blood and Bone Compound, and comparing this with the analysis of Dried Blood as sold as a manure and with pure Dissolved Bones.

"Analysis of No. 2 Blood and Bone Compound—
Soluble Phosphates, 2 per cent.
Insoluble Phosphates, 3 per cent.
Nitrogen, 1.62 per cent.
Potash (Pure or K_2O) 0.27 per cent.

"Analysis of Dried Blood (Meal) (Dublin Brand)—
Nitrogen, 8 per cent.
Potash and phosphates in very small quantities.

"Analysis of Pure Dissolved Bones (Dublin Brand)—
Soluble Phosphates, 12 per cent.
Insoluble Phosphates, 20 per cent.
Nitrogen, 2.67 per cent.

"From an examination of the above analyses, it is quite evident that no possible combination of Blood and Bones would show such a low percentage of plant foods as the Blood and Bone Compound. That being so, it is quite apparent that this compound contains a mass of other materials with little or no plant food, and which mainly serves to make up the bulk. It must not be supposed that there are no good compound manures on the market, as there are many. Farmers and merchants who are in doubt as to the value of artificial manures are advised to consult the Agricultural Instructor. This would lead to the best firms being patronised and would encourage merchants who place first-class manures on the market."

The following tables show the results of the actual tests made:—

TURNIP CROP: MANURIAL TEST (SERIES No. I.).

NOTE.—In this series the experimental area was divided into two plots, one of which was treated with the Blood and Bone Compound, the other with a mixture of manures sold locally.

TEST No. 1.

Plot.	Character of Soil.	Manure applied.	Cost.	Yield per Statute Acre.
			£ s. d.	T. C. Q.
A	Loam, . .	15 cwt. Blood and Bone Compound.	3 0 0	9 15 0
B	Do. .	9 cwt. Superphosphate, 1½ ,, Muriate of Potash, ¾ ,, Nitrate of Soda,	2 11 0	19 12 0
		TEST No. 2.		
A	Light gravelly loam.	13½ cwt. Blood and Bone Compound.	2 14 0	19 0 0
B	Do.	7 cwt. Superphosphate. 4 ,, Kainit. 1 ,, Sulphate of Ammonia	2 9 0	28 5 0
		TEST No. 3.		
A	Loam, . .	12 cwt. Blood and Bone Compound.	2 8 0	14 15 0
B	Do. . .	9 cwt Superphosphate,	1 11 6	31 10 0

TURNIP CROP: MANURIAL TEST (SERIES No. II.).

NOTE.—In this series the experimental area was divided into three plots, one of which was treated with farmyard manure alone, one with farmyard manure and Blood and Bone Compound, and the third with farmyard manure and manure mixture sold locally.

TEST No. 1.

Plot	Character of Soil.	Manure applied	Cost of artificials.			Yield per Statute Acre	
			£	s	d	Tons	Cwt.
A	Loam. .	10 tons Farmyard manure,	—			17	15
B	Do., .	10 tons Farmyard Manure 7½ cwt. Blood and Bone Compound.	1	10	0	17	15
C	Do., . .	10 tons Farmyard Manure. 4½ cwt Superphosphate ¾ ,, Muriate of Potash. 3 st Nitrate of Soda.	1	5	6	20	12
		TEST No 2.					
A	Light gravelly, .	10 tons Farmyard Manure.	—			13	0
B	Do., .	10 tons Farmyard Manure. 8½ cwt. Blood and Bone Compound.	1	14	0	20	0
C	Do., .	10 tons Farmyard Manure 4¼ cwt Superphosphate. 4¼ ,, Kainit. ½ ,,Sulphate of Ammonia	1	13	5	30	0

II.—TESTS CONDUCTED BY AGRICULTURAL INSTRUCTOR FOR COUNTY DUBLIN.

SERIES No. I.

In each of these tests the experimental area was divided into three plots, one of which was unmanured, one manured with a mixture of artificials prepared according to the Department's formula for the particular crop, and the other with the organic manure sold for the crop. In each test equal amounts were expended on the purchase of the manure for each of the two latter plots.

The results of the tests were as follows:—

No. 1.—HAY CROP.

Plot.	Manure applied.	Cost.	Yield per Statute Acre.
		£ s. d.	T. C. Q.
A - - -	Nil, - - - - - -	—	1 9 3
B - - -	5 8 cwt. Organic Manure, -	1 6 3	1 12 2
C - - -	1 cwt. Nitrate of Soda, - 2 „ Superphosphate, 2 „ Kainit, - -	1 6 3	2 5 3

No. 2.—OAT CROP.

Plot.	Manure applied.	Cost.	Yield per Statute Acre.	
		£ s. d.	Grain.	Straw.
A - -	Nil, - - - - -	—	48½ st.	17½ cwt.
B - -	4 cwt. Organic Manure, -	1 8 0	110 „	31½ „
C - -	5½ cwt. mixture recommended by Department composed of :— 1 part Sulph. of Ammonia. 3 „ Surperphosphate. 3 „ Kainit.	1 8 0	161½ „	43⅞ „

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Series No. 2.

In the following tests plot A was treated with farmyard manure alone, and plots B and C with farmyard manure and artificials, the cost of the artificials being of equal value in each plot.

No. 3.—Potato Crop.

Plot.	Manure applied	Cost of Artificial Manure.	Yield per Statute Acre
		£ s. d.	T. C. Q.
A . . .	Farmyard Manure, .	—	4 11 0
B . . .	Farmyard Manure and 7 cwt. Organic Manure.	2 2 0	5 13 0
C . . .	Farmyard Manure and 1 cwt. Sulphate of Ammonia 4 ,, Superphosphate 1 ,, Muriate of Potash.	2 2 0	6 14 0

No. 4.—Potato Crop,

Plot.	Manure applied.	Cost of Artificials.	Yield per Statute Acre.
		£ s. d.	T. C Q
A . .	Farmyard Manure, .	—	4 12 2
B . . .	Farmyard Manure and 6 cwt. Organic Manure.	2 2 0	4 13 1
C . . .	Farmyard Manure and 1 cwt. Sulphate of Ammonia 4 ,, Superphosphate. 1 ,, Muriate of Potash.	2 2 0	5 7 2

No. 5.—Turnip Crop.

Plot.	Manure applied	Cost of Artificials.	Yield per Statute Acre.
		£ s. d	T C. Q.
A . . .	Farmyard Manure,	—	22 14 0
B . . .	Farmyard Manure and 2 7 cwt. Organic Manure.	0 17 6	23 1 0
C . . .	Farmyard Manure and 5 cwt. XXX. Superphosphate.	0 17 6	24 11 0

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